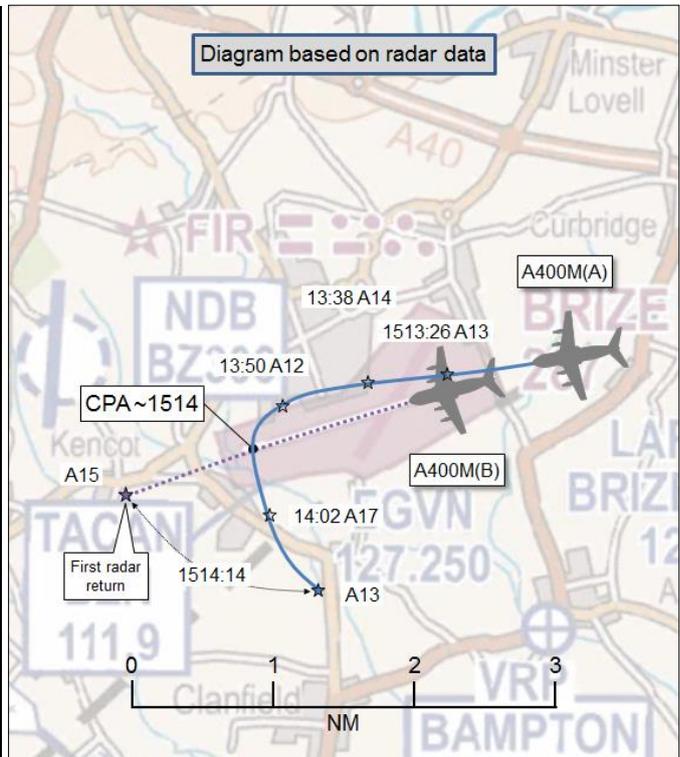


AIRPROX REPORT No 2017201

Date: 21 Aug 2017 Time: 1514Z Position: 5145N 00135W Location: Brize Norton airfield

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	A400M(A)	A400M(B)
Operator	HQ Air (Ops)	HQ Air (Ops)
Airspace	Brize CTR	Brize CTR
Class	D	D
Rules	IFR	IFR
Service	Aerodrome	Aerodrome
Provider	Brize Norton	Brize Norton
Transponder	A,C,S	A,C,S
Reported		
Colours	Grey	Grey
Lighting	Nav, HISLs, landing, taxi	'Standard'
Conditions	NK	NK
Visibility	>20km	10km
Altitude/FL	1400ft	NK
Altimeter	QNH (1021hPa)	NK
Heading	NK	255°
Speed	NK	NK
ACAS/TAS	TCAS II	TCAS II
Alert	RA	TA
Separation		
Reported	6-700ft V/0ft H	600ft V/0.25nm H
Recorded	NR	



THE A400M(A) PILOT reports recovering to Brize Norton RW25 from the Daventry corridor under radar vectors to the ILS. ATC informed the pilot that there was an A330 ahead of them in the pattern. Once on final approach they were switched to the Tower frequency where they were told to continue on the ILS. Upon breaking cloud, the A330 was seen at the far end of the runway just beginning to vacate, there was also an A400M[B] lined up on the threshold. They were instructed to 'break off' the approach and acted accordingly by moving to the deadside of the runway (the north side) in order to join downwind, the pilot recollected, at 1400ft QNH. At this stage A400M(B) was cleared to take off. The Pilot Monitoring requested instructions from the Tower and was told to turn downwind, which they did. At this point it was clear that the climb rate and speed of the departing A400M(B) could potentially put both aircraft in danger of a collision. The A400M(A) pilot tightened the turn to the left, whilst maintaining altitude and, at a mid-point across the runway, the TCAS RA announced 'monitor vertical speed' to alert the crew to the closure rate of the other aircraft. The instructions were followed (which requested the aircraft to maintain level) and shortly afterwards a 'clear of conflict' was heard. An observer pilot on the left-hand side of the flight deck assessed the miss distance to be in the region of 600ft, it was also assessed that had the crew not increased the turn rate there would have been a real danger of a collision. It was unlikely that the crew of A400M(B) would have received any TCAS RA alerts because this function is inhibited below 1100ft AGL in the climb out. The visibility was reported as >20km (the ATIS updated as they were under Radar Control). The cloudbase was reported as 1400ft, which is why the crew elected to join deadside for a low-level circuit to remain VMC when they were instructed to 'break off' the approach by ATC.

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

THE A400M(B) PILOT reports that they 'choked out' at 1449 for a 1520 departure because they had been cleared to arrive early at their destination. When approaching the 'Echo' holding point for RW25,

ATC informed them that they had a CTOT¹ approximately 1 hour later. They asked ATC to file a ready message, which they said they could do at 1505. At 1509 they were told that their CTOT had come forward to 1506 [UKAB note: which gave the crew until 1516 to get airborne]. There was an A330 on short final so they continued to hold. As it was taxiing to make a left turn on to 'Charlie' they were cleared to line up, although they had heard the call that there was A400M traffic at 8nm. They were then cleared to take off on the Malby SID, but the co pilot remarked that the traffic on approach would probably not get in. As they got airborne they heard A400M(A)'s pilot being told to 'break off the approach'. He believed that the ATIS was broadcasting that the visual circuit was closed at the time. The 'TRAFFIC' visual alert appeared in the HUD, so they elected to take out the Automatic Pilot and reduce the rate of climb. The co-pilot in the left-hand seat was trying to visually acquire the other aircraft. He believed that the closest he saw the traffic on TCAS was +600ft. The crew believed that the other A400 turned downwind to avoid them but they were unsure at the time of the other pilot's intentions or the separation that was in place.

They assessed the risk of collision as 'Low'.

THE BRIZE NORTON AERODROME CONTROLLER reports that he was the Screen controller monitoring a trainee in Aerodrome Control band-boxed with Ground; they had been in the control position for approximately 1hr 15mins. He had taken over screening duties from another controller and was unaware how long the trainee had been in position when he took over as Screen. The A400M(B) pilot called for start 30mins before their flight-planned time and requested taxi shortly after. During taxi the A400M(B) pilot received a CTOT of 1536, which would have meant a long wait at the hold. A ready message was sent at 1505 by the Assistant, at the request of the pilot. An A330 had been pre-noted inbound at 20nm. When the A330 was at 6nm, A400M(B) received a new CTOT of 1506, the time was 1509. At 2nm release was obtained from Approach for A400M(B). After the A330 had landed, the A400M(B) pilot was lined up promptly at 'Echo'. A400M(A), which had previously been pre-noted inbound, was now approaching 6nm. He judged that the A330 would not be off the runway with enough time to allow both the departing and arriving aircraft, therefore he instructed the trainee to break off A400M(A). A400M(B) was a higher priority aircraft due to the CTOT iaw local orders. After issuing the break-off instruction, the trainee then cleared the A400M(B) pilot to take off. A400M(A) was now approaching 1nm and therefore was told to turn south. The A400M(B) pilot was transferred to Approach and the A400M(A) pilot joined the visual circuit to land. The Supervisor was in the Visual Control Room (VCR) and witnessed the event.

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

THE BRIZE NORTON SUPERVISOR reports that he had been positioned in the Approach Room right up until the event, but realising that Tower had a slightly complex situation unfolding (they had rung Radar for release on the departing aircraft, so it became apparent that they were going to try and get the departure out in between the two arrivals) he moved to the VCR. As he arrived in the VCR he heard the Screen controller instruct the trainee to issue a break-off to the pilot on final (A400M(A)). This was the correct call because the departure was not going to be airborne in time to allow A400M(A) to land. However, immediately after issuing the break-off, the trainee then issued a take-off clearance to the A400M(B) pilot lined up for departure. The trainee had confirmed with the A400M(A) pilot that they were visual and decided to integrate them into the visual circuit. Technically, at this point, once in the visual circuit the pilot became responsible for maintaining visual separation. However, it was not the best practice because the departing aircraft and the aircraft going-around would be flying similar profiles and the departing aircraft would be beneath A400M(A) and climbing, therefore making it difficult for the A400M(A) pilot to maintain visual contact with A400M(B). Shortly after the incident he had both the trainee and Screen relieved from console to conduct their own de-brief before he then also spoke with both of them to de-brief a better course of action. The correct course of action in this circumstance, he considered, would have been to wait after issuing the break-off until A400M(A) had turned downwind and therefore vacated the climb-out lane prior to issuing the take-off clearance. However, having issued the take-off clearance, a left turn to position downwind

¹ Calculated Take Off Time. The Departure time provided by the Central Flow Management Unit. It has a tolerance of -5 to +10 minutes.

was probably the appropriate decision but the instruction should have been issued earlier in order to ensure the turn was conducted over the RW25 threshold and not the mid-point of the runway where the high rate of climb of the departure meant that it would be a factor.

Factual Background

The weather at Brize Norton was recorded as follows:

METAR EGVN 211450Z 00000KT 9999 BKN013 BKN016 19/16 Q1021 GRN NOSIG=

Analysis and Investigation

Military ATM

An Airprox occurred in the Brize Norton visual circuit, between two A400M aircraft. A400M(A) was conducting an IFR ILS approach into Brize Norton, while A400M(B) was conducting an IFR departure from Brize Norton. Both pilots were receiving an Aerodrome Control Service from the Brize Norton Aerodrome Controller (ADC). Radar replays using NATS radars did not show the Airprox.

The Brize ADC was under training and was therefore working under guidance of a Screen Controller. Although not high intensity, the traffic situation grew in complexity. A400M(B) pilot called for start 30 minutes earlier than his flight planned time and was given a CTOT that would require a lengthy wait. Once ready, a new request was made and, at 1509, a CTOT of 1506 was issued, which meant that the aircraft would need to depart almost immediately [by 1516]. At the same time, another aircraft was landing and A400M(A) was approaching 6nm final. The Screen Controller identified that there was not enough time to allow the second landing prior to the departure, which had priority in accordance with local orders, and instructed the trainee ADC to break off A400M(A)'s approach. The break off was initiated, however this was immediately followed by a take-off clearance for A400M(B).

On checking in with Brize ADC for an ILS approach, the pilot of A400M(A) had been informed that the visual circuit was clear, but the fact that A400M(B) was lined up for departure was omitted. Once broken off from the ILS approach, the pilot of A400M(A) was asked if he was visual, which he responded that he was visual with the runway. This meant that A400M(A) would be allowed to join deadside, turn left to cross over to downwind and land from the approach. Once deadside, the pilot asked for instructions and was told by the ADC to turn downwind, responding that they were turning left and descending to 1300ft into the visual circuit to land. Shortly after, the A400M(B) pilot was transferred to Brize Approach. Neither pilot was explicitly informed of the other aircraft, although they were operating on the same frequency.

When the trainee ADC received confirmation from the pilot of A400M(A) that they were visual with the runway and joining the visual circuit, the trainee and OJTI assumed that this meant that the A400M(A) pilot was cancelling IFR and therefore adopting responsibility for separation from the departing IFR A400M(B). The lack of Traffic Information meant that the A400M(A) pilot's Situational Awareness (SA) was reduced, and the aspect of the departing A400M(B) made it difficult for the conflicting aircraft to be seen. The Brize investigation highlighted that a better course of action would have been for the trainee ADC to exert positive control and cancel the take-off clearance or, failing that, instruct the A400M(A) pilot to turn downwind early, which would have removed the aircraft from the departure lane² as soon as possible. At this stage, Traffic Information could also have been passed to the departing A400M(B), allowing the pilot to decide if he was content to proceed.

² The SID profile would have A400M(B) turn onto a NE track on passing 1800ft QNH, towards and at the same altitude as A400M(A) deadside in the circuit.

The Brize Supervisor had identified the increasing complexity of the scenario and repositioned from the Approach Control Room to the Visual Control Room to offer assistance as required, but was still trying to achieve full SA of the developing scenario. When the trainee ADC unexpectedly issued the take-off clearance to the A400M(B) pilot, although the Screen Controller told the trainee to turn A400M(A) downwind, neither the Screen Controller nor the Supervisor intervened with sufficient action to ensure safe separation was maintained.

UKAB Secretariat

The A400M(A) and A400M(B) pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard³. An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation⁴.

The Military regulations⁵ state:

Controllers providing an Aerodrome Service should issue information and instructions to AS⁶ to achieve a safe, orderly and expeditious flow of air traffic in order to assist in preventing collisions between:

- c. AS landing and taking off.*
- d. AS flying within the circuit area.*

The following radar recordings were taken from the NATS radar source, which would not have been available to the Brize controllers. They do not show the CPA between the two aircraft and the R/T timing from the transcript is not synchronised with the radar recordings. It appears that there is a 20-30 sec discrepancy between the two on this occasion.



Figure 1 1512:38 A400M(A)-3740.
(A400M(A) pilot instructed to break off approach, based on R/T transcript.)

³ SERA.3205 Proximity.

⁴ SERA.3225 Operation on and in the Vicinity of an Aerodrome.

⁵ RA1261

⁶ Air Systems.



Figure 2 1513:09.
(A400M(A) climbing.)



Figure 3 1513:28.
(A400M(A) pilot reports turning left.)



Figure 4 1513:40.

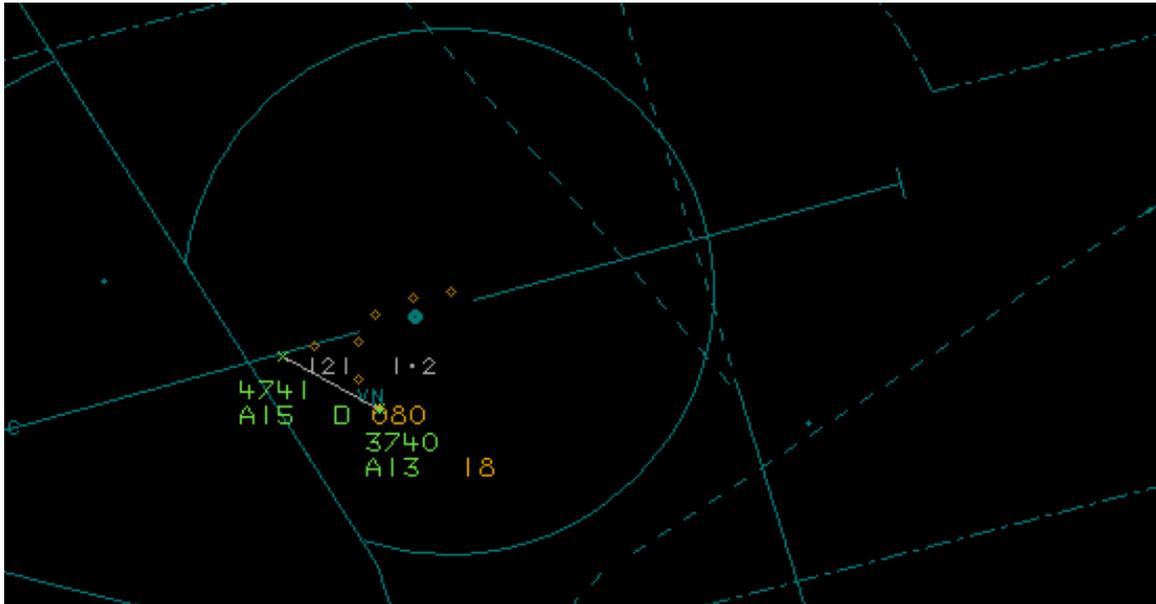


Figure 5 1514:16 A400M(B)-4741.
(A400M(B) first appears.)

Comments

HQ Air Command

This incident stems from the fact that the departing A400M had a very short window of opportunity to get airborne to make its slot time; it is unfortunate that this was coincident with the approach of 2 other aircraft. ATC attempted to launch A400M(B) between a landing A330 and A400M(A) on an instrument approach, in accordance with unit priorities. When it became apparent to the controller that A400M(A) would not be able to complete its approach, appropriate instructions were issued to the pilot of A400M(A) to break off the approach. However, safe separation was not maintained and the ATC investigation into this incident identified a number of factors that contributed to the loss of safe separation, namely:

- a. A lack of information to the pilot of A400M(A) regarding the presence of A400M(B) on the threshold for departure;
- b. A lack of positive control from the ADC to ensure lateral separation; and
- c. A lack of timely intervention from the ATC instructor.

Having spoken to both aircraft captains, it is apparent that the lack of information to the pilot of A400M(A) on the presence of A400M(B) on the threshold reduced the time available for the captain of A400M(A) to make a plan to avoid the departing aircraft. Essentially, the pilot of A400M(A), having become visual with the departing aircraft on the runway, had no option but to turn downwind as quickly as possible in order to avoid the climb-out lane. Additionally, the perception of the captain of A400M(B) was such that there was enough time to get airborne ahead of the A400M on approach and make the slot time. This perception was reinforced to the pilot of A400M(B) by the issuing of a take-off clearance from the ADC. However, during the departure of A400M(B), when TCAS alerted both pilots to the reducing separation between the two aircraft, timely and appropriate actions were taken by both pilots.

This incident demonstrates that all humans are fallible, but it also demonstrates the importance of passing relevant information. The crew of A400M(A) may have been able to take alternative action had they been informed of the departing aircraft. Similarly, had the crew of A400M(B) fully appreciated how close A400M(A) was to the airfield they may have elected to hold on the brakes for a few extra seconds. No single barrier to MAC can be fully effective and the employment of multiple barriers is testament to the inherent weaknesses of each. Crews and controllers should be cognisant of the fact that no person is immune to human error.

Summary

An Airprox was reported when A400M(A) and A400M(B) flew into proximity at about 1514 on Monday 21st August 2017. The A400M pilots were both operating under IFR. At the time of the Airprox the two aircraft were within Class D airspace of the Brize CTR (surface-to-2400ft), in receipt of an Aerodrome Control Service from Brize Norton.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, the controller concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

In commencing the discussion, the HQ Air Command member, who had spoken to both pilots, was able to brief the Board on their thoughts and their respective actions during the period leading up to, and at the time of, the Airprox.

The A400M(A) crew were inbound on the ILS to RW25. Although they had reported in their filed report that they were operating under VFR the Board opined that under the weather conditions which existed at Brize at the time, it would have meant that they would, at least initially, have been operating under IFR whilst on final approach. The HQ Air Command member said that the crew had reported that they had not been aware of the departing A400M(B) until they had become visual with the airfield and had seen the aircraft on the runway. They had also seen the previous landing aircraft, an Airbus A330, just vacating at the end of the runway. The controller asked if they were visual with the airfield, which was confirmed. As soon as the pilot of the A330 had reported that they had vacated the runway, the A400M(A) pilot was instructed to break off the approach and virtually straight away the A400M(B) pilot had been cleared for take-off. The A400M(A) pilot moved to the deadside of the runway but was concerned that there was little time to formulate a plan to avoid the departing aircraft, because of the late notification to break off the approach. They elected to remain at a low-level to enable them to stay VMC and be able to turn into the low level circuit. They decided that it would not be practical to remain deadside on runway heading parallel to A400M(B) because they were not sure how long it would take for them to become vertically separated as A400M(B) climbed. They asked ATC what action they should take, but had already decided to turn left onto the downwind leg; this coincided with the instruction from ATC to turn downwind. As they tightened the left turn across the mid-point of the runway they obtained a TCAS RA to 'monitor vertical speed', which soon turned to 'clear of conflict'.

For their part, the A400(B) pilot reported that they were conscious of the new departure slot expiring at 1516. They confirmed that, at 1510, whilst at the holding point, they had heard the broadcast that there was an A400 at 8nm, and shortly after this they were instructed to line up on the runway. Immediately after hearing that the A400M(A) pilot had been instructed to break off their approach, they were cleared to take off, which they did because they thought the A400M(A) was further behind them than it was. Some Board members wondered whether the A400M(B) pilot should have been better able to assess the relative position of A400M(A) from the timing of the previous call that it was at 8nm, but they acknowledged that there had been no specific Traffic Information to the A400M(B) pilot other than them hearing the 8nm check and the instruction for A400M(A) to break off its approach. Members could understand why the decision was taken to take off; they were facing a tight departure slot and they probably believed that ATC were ensuring separation from A400M(A).

The Board then discussed the actions of ATC. The Board was aware that in the period leading up to the Airprox the Brize Aerodrome controller had been operating as an On the Job Training Instructor (OJTI) to a trainee. The position had also been bandboxed with the Ground position. Some members wondered if this was appropriate as it would appear from the transcript that the trainee was lacking experience and should not have been expected to control two frequencies, especially in a complex situation. At the very least, controller members opined that he should have been closely monitored for intervention by the OJTI as required. The trainee decided to depart A400M(B) ahead of A400M(A), and instructed its pilot to line up on the runway. About 90 seconds after the A400M(B) pilot had been

cleared to line up, the OJTI, having decided that it would not be possible for the A400M(A) pilot to land, did intervene and instructed his trainee to break off its approach, which was carried out by the trainee. However, members noted that no mention was made to the A400M(A) pilot about A400M(B) being on the runway. Had the A400M(A) pilot been given Traffic Information about A400M(B) it would likely have allowed more time for them to assess the situation, resulting in the pilot commencing the left turn earlier, probably by the threshold of the runway rather than the mid-point. However, the trainee's next transmission was to clear the A400M(B) pilot for take-off, also without informing the A400M(B) pilot of A400M(A)'s position, thereby possibly influencing the pilot's decision to take off or not. The Board considered that a contributory factor to the Airprox was that the Brize Aerodrome controller did not pass sufficient Traffic Information to each pilot. The Board considered that the OJTI, although probably surprised at his trainee's actions, should have intervened again and immediately cancelled the take-off clearance. If this had taken place the Airprox would not have occurred. The Board considered that the Brize OJTI not intervening was also a contributory factor to the Airprox.

Additionally, although realising that the station priorities meant that the departing A400M(B) had priority, the Board considered that there had probably been sufficient time for A400M(A) to land and vacate the runway and allow the A400M(B) pilot to depart within the aircraft's slot time. Some Board members, although commending the Supervisor for deciding to relocate from the Approach to the Visual Control Room, also wondered if he should have moved earlier, if that had been possible. He might then have had time to assimilate the traffic situation and he could have intervened to ensure that A400M's take-off clearance was cancelled.

A lengthy discussion then took place as to whether the A400M(A) pilot was in fact operating under VFR, as they reported in their filed report, or was still under IFR at the time of the Airprox. Under the rules stated in SERA.5015(c)⁷ *'an aircraft electing to change the conduct of its flight from compliance with the instrument flight rules to compliance with the visual flight rules shall notify the appropriate air traffic services unit **specifically that the IFR flight is cancelled** and communicate thereto the changes to be made to its current flight plan'*. On this occasion no transmission was received from the A400M(A) pilot to cancel the IFR plan, nor was there any request made by ATC to establish which flight rules the pilot was complying with. Military regulations⁸ state that *'Whilst there is a requirement for controllers to monitor the Met conditions, controllers should also establish the flight rules that AS are operating in accordance with, to ensure the appropriate ATS provision in Class D CTR. The pilot is responsible for determining the flight rules (VFR or IFR) under which they wish to conduct their flight, taking into account the Met conditions, airspace classification and the limitations of their licence/qualifications'*. The Board commented that the type of approach (VFR/IFR) was important because it dictated the separation required between the two aircraft. In Class D airspace, ATC has to separate IFR flights from other IFR flights, but this is not a requirement between IFR and VFR flights. Military controller members were of the opinion that once a pilot reports visual with the airfield then he is responsible for integrating his aircraft into the visual circuit. Non-military controller members referred to the SERA requirement and opined that IFR was not cancelled until the words 'cancelling IFR' were specifically used. Although it may have become common habit to interpret a pilot's 'visual' call as cancelling IFR, the fact was that A400M(A) was technically still IFR and so ATC were responsible for ensuring separation with A400M(B), which they did not achieve. The HQ BM Safety advisor was able to confirm, after the meeting, that this assumed procedure is not written in either Brize Norton local documents or within the MAA regulations. Consequently, in order to remove any ambiguity the Board resolved to recommend that 'HQ Air Command examine current Military regulations with regard to the status of pilots operating under IFR in Class D CTRs who declare 'visual' with the airfield'.

The Board then turned its attention to the cause and risk of the Airprox. The Board considered that although the A400M(B) pilot could have stopped their aircraft's departure to prevent the Airprox, it was the actions of the Aerodrome controller that had caused the incident. By clearing the A400M(B) pilot to depart, he had not ensured the separation of the two A400Ms as was a requirement for IFR flights in Class D airspace. Accordingly, the cause was decided to be that the Brize Aerodrome controller had cleared the A400M(B) pilot to take-off into conflict with A400M(A). The Board then turned its attention to the risk. It was unfortunate that the CPA was not recorded on radar but both

⁷ Change from IFR flight to VFR Flight.

⁸ RA1261.

pilots had assessed the vertical separation to be in the order of 600ft from visual and TCAS indications. Members noted that the A400M(A) pilot had received a TCAS RA to monitor vertical speed, but only for a short time whilst in the aircraft's left turn. They also noted that A400M(B) pilot had reduced their rate of climb after receiving a TCAS 'traffic' HUD alert. The radar recordings only show A400M(B) after A400M(A) had been established in its left turn, when it was at 1500ft. It is possible that A400M(B) did not show earlier because it was below radar cover, thus adding credence to the fact that it may have been at least 600ft below A400M(A) at the closest point. In view of all this information, the Board considered that although safety had been degraded, there had been no risk of a collision. Consequently the Board determined that the risk was Category C.

PART C: ASSESSMENT OF CAUSE, RISK AND SAFETY BARRIERS

Cause: The Brize Aerodrome controller cleared the A400M(B) pilot to take-off into conflict with A400M(A).

Contributory Factor:

- 1) The Aerodrome controller did not pass sufficient Traffic Information to each pilot.
- 2) The Brize OJTI did not intervene.

Degree of Risk: C.

Recommendation: HQ Air Command examine current Military regs with regard to the status of pilots operating under IFR in Class D CTRs who declare visual with the airfield.

Safety Barrier Assessment⁹

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 **ineffective** because the Aerodrome controller did not comply with the requirements for providing an Aerodrome Service as stated in military regulations.

Situational Awareness and Action were assessed as **partially effective** because the Aerodrome controller cleared the A400M(B) pilot for take-off whilst the A400M(A) pilot was breaking off his approach close to the airfield. Sufficient Traffic Information was not passed to either pilot.

Flight Crew:

Regulations, Processes, Procedures, Compliance and Instructions were assessed as **partially effective** because the A400M(A) crew did not confirm with ATC the type of flight rules they were operating under. In the event they did not integrate into the visual circuit clear of A400M(B).

Situational Awareness and Action were assessed as **partially effective** because the A400M(A) crew were aware of A400M(B) departing, although at a late stage, but were unsure how they should proceed and requested the action to be taken from ATC. A400M(B) pilot was only generally aware that A400M(A) pilot was conducting an approach and so was unable to make an informed decision on whether to depart or not.

⁹ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

