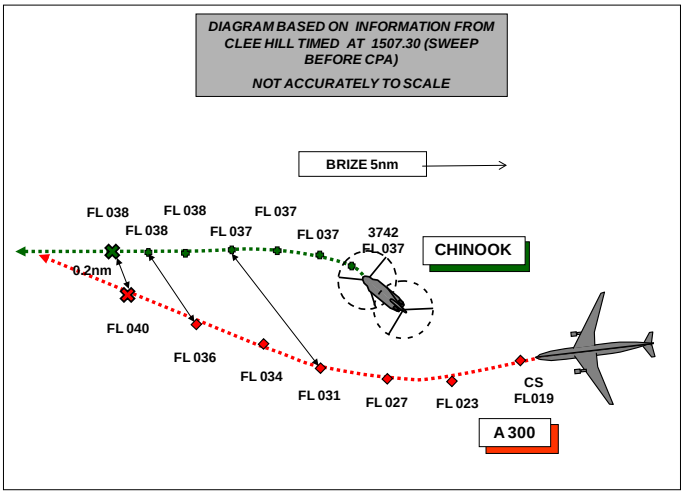
AIRPROX REPORT No 2011160

Date/Time: 18 Nov 2011 1507Z

Position: 5145N 00144W (5nm W Brize Norton - elev 287ft)

Airspace: Oxford AIAA (*Class: G*)

	Reporting Ac	*Reported Ac*
Type:	Chinook	A300
Operator:	HQ JHC	CAT
Alt/FL:	3500ft QFE (1005hPa)	5000ft 1015hPa
Weather:	VMC NR	VMC NR
Visibility:	20km	NR



Reported Separation:

NR V/ 100ft H 300ft V/ NR H

Recorded Separation:

501ft V/0.05nm (90m) H

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports flying an IFR training flight from Odiham to Brize Norton in a camouflage green ac, squawking 3742 with Mode C, in receipt of a TS from Brize DIR. They were joining the NDB/DME hold for RW26, had overflown the beacon on a parallel join and were part way through the left-hand turn to intercept the inbound QDM (passing a heading of about 180° at 120kt he thought) when a call was received from ATC to the effect that an ac would pass close to them. The ac (an airliner, believed to be an Airbus) was sighted in their 3 o'clock, about 100ft away, climbing away having passed over them. Brize ATC informed them that they would be filing an Airprox and he added that he would also be filing.

He assessed the risk as being high.

THE A300 PILOT reports flying a white ac on an IFR departure from Brize Norton with all external lights switched on and squawking 5120 while in contact with Brize APP. They were departing on a MALBY SID, heading 285° at 250kt in VMC, when ATC passed TI on traffic which they saw on TCAS. They then looked outside and saw a Chinook helicopter, initially about 4nm away, on their right side in the 2 o'clock position at about the same altitude. ATC then instructed them to turn right to heading 020° and simultaneously they had an 'RA climb' warning. They followed the RA climb guidance and advised ATC that they had maintained heading 285° and were continuing to in accordance with the RA. If they had turned to heading 020° as instructed by ATC, a collision would have been unavoidable.

He assessed the risk of collision as being high.

THE BRIZE NORTON CONTROLLER reported that he had just taken over as the Approach controller (RA) at the start of his shift. He was fully refreshed, not at all tired and had no issues with currency in the RA seat. A Director (DIR) was in place who was working a Chinook that had requested that it enter the hold (situated directly above the airfield and orientated above the climbout lane). In order to facilitate the departure of an A300 on a MALBY departure he instructed DIR to climb the Chinook to 3500ft on the Brize QFE of 1005hPa to enter the hold. He had planned for the A300 to

climb to 2200ft on the Brize QNH of 1015hPa, which would have given 1600ft separation between it and the holding Chinook.

The ADC rang to request release for the A300, the climbout restriction of 2200ft QNH was passed to him and he read it back. After he had finished talking to the ADC he rang LARS to initiate co-ordination against a 3716 squawk seen on the A300's planned departure route; he agreed that the LARS ac would remain not above 4000ft Brize QNH and that LARS traffic would avoid his A300 by 3nm until the A300 had climbed above 5000ft.

By that time the Chinook was manoeuvring to enter the Hold having levelled at 3500ft QFE, directly above the climbout lane. As soon as he had finished the co-ordination with LARS the A300 called on frequency (he believes without hearing the recording), "Brize Departure A300 C/S airborne standard MALBY departure". He replied something like, "A300 C/S Brize Approach identified, traffic 1 o'clock 1 mile similar heading helicopter co-ordinated above*"* and the pilot replied that he was visual with the co-ordinated traffic. At that time he was considering how he would climb the A300 from under the Chinook but over the top of the LARS ac that he had co-ordinated; he decided that he would turn the A300 onto a more Northerly heading so that he could climb it earlier. He then asked the A300 pilot what alt he was passing in order to verify his Mode C and to ensure that it was past the terrain safe level of 1800ft before he could turn the ac. The A300 replied that he was passing 2900ft – 700ft higher than its cleared level, so he told the pilot to stop climb immediately and turn right so that the ac would pass behind the Chinook but still keep it in sight. As soon as he had finished this transmission the A300 pilot called *"Passing 3-4, ...TCAS"* which he assumed was an RA as by this time the ac were very close, co-level and with the radar returns merged.

He immediately leaned over to the U/T DIR and told him to tell the Chinook that the A300 was climbing through his level. The A300 continued to climb above the Chinook with the contacts still merged.

Once the A300's Mode C indicated above that of the Chinook, he instructed the A300 to continue to climb to FL80. With hindsight he should not have done this as the ac was still responding to the TCAS RA; however, he was trying to establish separation as soon as possible and to continue the climb once the A300 had climbed above the Chinook seemed to be the best way to do this.

He did not inform A300 that he would be filing an Airprox; he believes that he was quite shocked by what had happened as this was the closest that he had ever seen 2 ac on radar.

He passed the A300 over to the civil sector and was relieved from the console.

UKAB Note (1): On request NATS helpfully provided a TCAS analysis reproduced (disidentified) below.

TCAS Performance Assessment

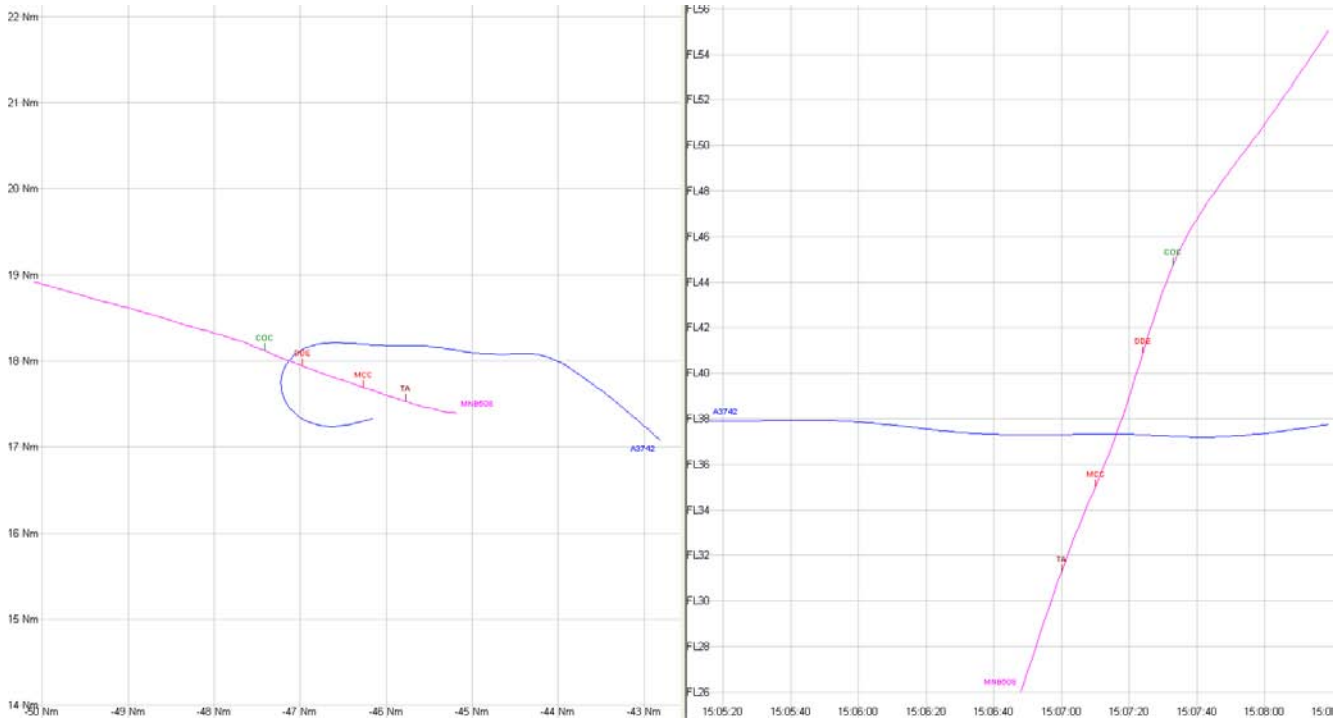
Summary:

This was a non-NATS incident that occurred 3nm West of Brize Norton around 1505 on the 18th of November 2011. The encounter was between a (non TCAS or Mode S equipped) Chinook and an A300. The Mode A squawks were 3742 and 5210.

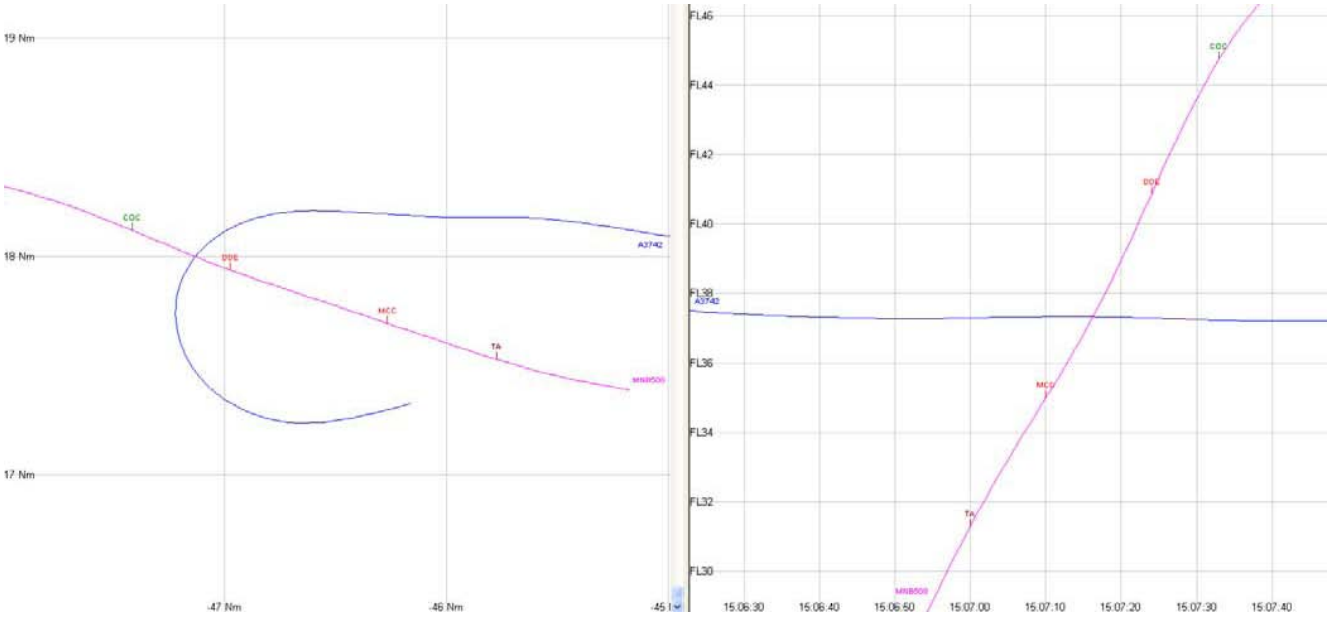
Mode S Downlink

ADVISORY CODE	*RA DL TIME*	*Source Mode-S*	*Threat Mode-S*	*Source Mode-A*	*Radars*	*Message sent Within previous: (s)*
CCL	15:07:11	4961750	n/a	5210	he1.deb.pea.cle	3
KVS	15:07:21	4961750	n/a	5210	deb.cle.he1	2
AVS	15:07:26	4961750	n/a	5210	pea.deb.he1.cle	3

InCAS Simulation



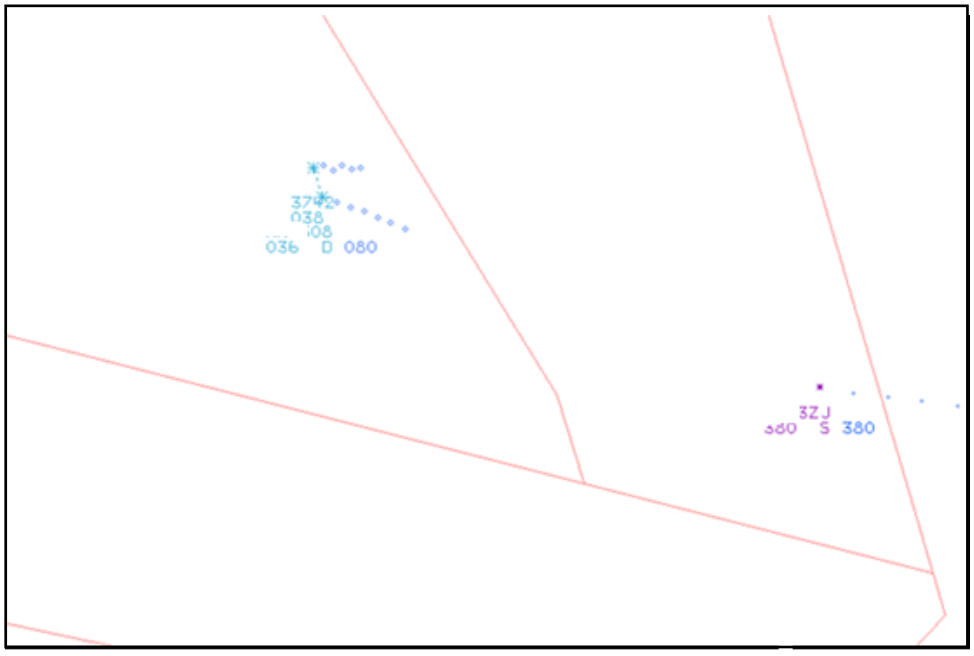
Encounter Diagram Based on Heathrow Single Source Radar Data



Encounter Diagram Based on Heathrow Single Source Radar Data

CODE	*DESCRIPTION*		*CODE*	*DESCRIPTION*
TA	Traffic Alert		MCC	Maintain Crossing Climb
RA	Resolution Advisory		DDE	Don't Descend
COC	Clear of Conflict			

STCA activated at 15:07:15 as observed from the radar recordings.



InCAS Alert Statistics

Callsign: A300 **Mode A:** 5210

Alert Time	*Alert Description*	*Altitude (FL)*	*Intruder Range (Nm)*	*Vertical Sep. (ft)*
15:07:00	TRAFFIC ALERT	31	0.83	569
15:07:10	MAINTAIN V/S CROSSING	35	0.62	202
15:07:24	ADJUST V/S	41	0.18	388
15:07:33	CLEAR OF CONFLICT	45	0.28	782

Callsign: CHINOOK **Mode A:** 3742

Alert Time	*Alert Description*	*Altitude (FL)*	*Intruder Range (Nm)*	*Vertical Sep. (ft)*
It is assumed that this aircraft was not TCAS II equipped				

Closest Point of Approach (CPA)

CPA Time	*Horizontal Sep. (NM)*	*Vertical Sep. (ft)*
15:07:27	0.05	501

Minimum Lateral Separation

Min. Latsep Time	*Horizontal Sep. (NM)*	*Vertical Sep. (ft)*
15:07:27	0.05	501

Minimum Vertical Separation

Min. Vertsep Time	*Horizontal Sep. (NM)*	*Vertical Sep. (ft)*
15:07:16	0.46	11

Assessment of TCAS Performance

Three sources of information are considered in this analysis: the resolution advisory (RA) messages recorded via mode S downlink which are recorded by Eurocontrol's automatic safety monitoring tool (ASMT); the mode S downlink from the Heathrow radar alone; and a simulation in the software tool InCAS.

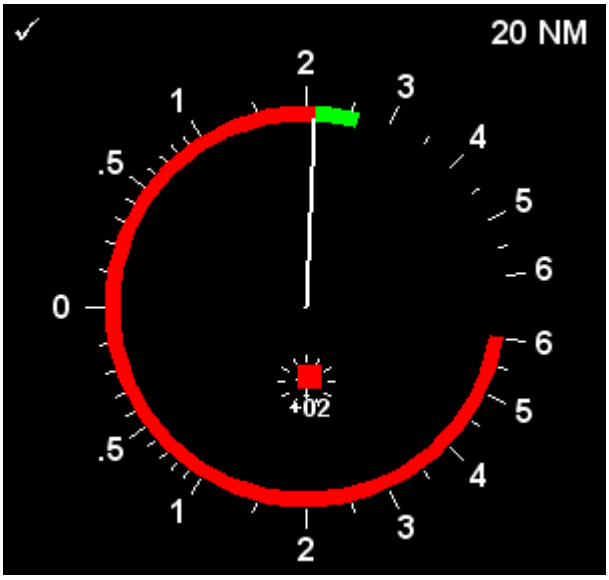
The ASMT did not record any downlinked RAs from the Chinook and it is therefore assumed that this aircraft was not TCAS II equipped.

The A300 downlinked three RAs over a period of approximately 15 seconds. Only two of these appear in the InCAS simulation, which is most likely due to the track interpolation - single source radar data are typically available in six-second intervals and the simulator interpolates the track between these points. The missing RA, a *keep vertical speed* (KVS, enunciated 'maintain vertical speed, maintain') appears to have been short-lived; according to the mode S data recorded from the Heathrow radar the KVS was only downlinked in one cycle.

According to InCAS simulation, the A300 received a traffic alert (TA) at 15:07:00 and the first RA – *maintain crossing climb*, MCC, enunciated as 'maintain vertical speed, crossing maintain' – ten seconds later. This timing is in agreement with the mode S downlink, which recorded a crossing climb RA in the three seconds prior to 15:07:11. From the NATS radar recordings STCA is observed to activate at 15:07:15, which is shortly after the first RA. The KVS was issued in the two seconds prior to 15:07:21, which appears from the simulation to have been shortly after the aircraft crossed vertically around 15:07:16.

The final RA, an *adjust vertical speed* (AVS, enunciated 'adjust vertical speed, adjust') was issued in the three seconds prior to 15:07:26, which is in agreement with the simulated time. It should be noted that InCAS splits AVS RAs into several sub-types; on the graph above the AVS is labelled DDE for *do not descend*.

The *maintain crossing climb* RA is labelled red in InCAS simulation to indicate that it is considered to be a corrective RA. The IVSI for the A300 at the point at which the MCC was issued is shown below; the pilot was able to comply with the RA with only a very minor change in vertical speed.



IVSI for the A 300 at 15:07:10'

BM SAFETY MANAGEMENT reported that this Airprox occurred W of RAF Brize Norton (BZN) between a Chinook operating IFR in the NDB/DME hold for RW26, in receipt of a TS from BZN DIR, and an A300 departing IFR on a MALBY 26 SID, in receipt of an ATS from BZN APP. BZN was operating on RW26.

APP reported that his workload was medium to low, with moderate task difficulty and that he had just taken over the APP position so he felt fully refreshed and had no currency issues. At the time of the Airprox, the A300 was the only ac on the APP freq. The Supervisor added that the Unit workload was high to medium and that he did not witness the Airprox as he was assisting LARS who was busy.

The incident sequence commenced at 1458:29 when GND passed the A300 crew climb-out instructions, *"[A300 C/S] after departure climb MALBY SID flight level eight-zero, squawk five-two-one-zero and with Brize Approach one-two-seven decimal two-five-zero";* the pilot read this back correctly.

The MALBY 26 SID requires ac to first depart on the OSGOD SID, climbing on RW track to BZN 0·5DME or 500ft QFE, whichever is later, then turn right onto track 300° to intercept BZN 285R to OSGOD, climbing as directed. After OSGOD, ac are required to turn left direct to MALBY to join CAS 5nm N of MALBY at FL80. The BZN SIDs are, however, designed around the use of the BZN TACAN and to accommodate this, the SID TAP provides coordinates for OSGOD and, if required, ATC can provide civilian crews with climbout instructions so that they can fly the OSGOD SID accurately.

At 1502:55 APP called TWR and stated, *"A300 C/S climb out restriction two thousand two hundred feet Q-N-H, released"*; TWR then reconfirmed with APP "*two thousand two hundred feet on the Q-N-H?"* and APP replied, *"that's the one"* which TWR acknowledged, the landline call ending at 1503.03. As reported by APP, the climb out restriction of 2200ft QNH equates to 1900ft QFE and this height ensured that the A300 would be above the Terrain Safe Level of 1800ft QFE and also provided with 1600ft vertical separation against the Chinook at 3500ft QFE in the NDB/DME hold for RW26.

Having transferred to TWR's freq, at 1503:13 TWR passed the climb-out restriction to the A300 stating, *"A300 C/S climb out restriction two thousand two hundred feet on Q-N-H one-zero-one-five acknowledge"*; the A300 pilot replied, *"one-zero-one-five copied, we are also able to take the [holding point] Echo for departure"*. TWR immediately re-stated, *"A300 C/S just confirm climb out restriction two thousand two hundred feet on one-zero-one-five"* to which the pilot replied, *"yes, good, copied thank you"*. TWR then informed the A300 pilot that *"I need you to say back, climb out restriction, two thousand two hundred feet"*. The A300 pilot acknowledged this stating, *"yeah, two thousand two hundred feet copied"*. The A300 was then given line-up clearance at 1503:44, cleared for take-off at 1505:02 and left the TWR freq at 1506:13.

CAP 413 Chapter 2 Section 1.14.9 states that:

> 'when an amendment is made to a clearance, the new clearance shall be read in full to the pilot and shall automatically cancel any previous clearance.'

It is reasonable to argue that a climbout restriction is an amendment to a previously issued clearance. The form of this clearance is outlined at CAP 413 Chapter 2 Section 1.14.4 and states that instructions relating to height/altitude/level should be made as:

> '[C/S] *climb to altitude/height/flight-level…'*

However, the RAF's Central ATC School (CATCS) teaches that when there is a requirement to pass an amended climb-out instruction to a departing ac, the following phraseology should be used:

> 'C/S not above height/altitude/level, cleared take-off…'

This phraseology was introduced by the CATCS following the introduction of CAP413 to mitigate the loss of the military-specific phrase 'climbout restriction' which was not included within CAP413. Consequently, the use of the phrase 'climb out restriction' has not been taught at the CATCS since the introduction of CAP413 [to the military]. However, investigation with RAF ATM STANEVAL and a small sample of Examining Officers at RAF ATC Terminal units has indicated that the phrase 'climb-out restriction' is still considered standard. Moreover, the phrase 'not above height/altitude/level…' introduced by CATCS does not appear in CAP413 in the context of clearances to ac and does not appear to have been publicised outside the CATCS.

As stated in the occurrence report, APP contacted LARS at 1505:48 to co-ordinate the departing A300 against LARS traffic 15.9nm WNW of BZN. Agreement was reached that APP would ensure that the A300 avoided the LARS traffic, which was "climbing to four thousand feet QNH" by 3 miles until the A300 was "not below five-thousand feet QNH", the landline call ending at 1506:08.

At 1505:56, DIR passed TI to the Chinook on the A300 stating, *"Chinook C/S report ready for the procedure, traffic to depart Brize Norton, an a three hundred coordinated below"* which the pilot acknowledged.

At 1506:16 the A300 pilot called APP on climb-out, *"Brize Departure good afternoon, A300 C/S airborne"*; the ac was identified and provided with TI on, *"traffic one o'clock, one mile, similar heading, coordinated one thousand feet above"* and the pilot reported, *"we have it in sight".* The subject of this TI was the Chinook which was 2nm WNW of BZN, tracking W at 3500ft QFE. APP reported that he considered the provision of TI about the Chinook a priority since the ac would have been displayed prominently on the A300 TCAS.

CAP413 Chapter 6 Section 1.1.2 states that:

'pilots of all ac flying instrument departures shall include the following information on initial contact with the first en-route ATS unit: callsign, SID, current/passing level and initial climb level.'

There is no guidance on what ATCOs are to re-iterate in their first R/T contact with a departing ac. In the absence of any of this information however, the RAF CATCS teaches that, on initial R/T contact between a departing ac and ATC, the ATCO shall re-iterate the altitude/height/level instruction. This teaching is not reflected in any military ATM regulatory or policy document; however, investigation with RAF ATM STANEVAL and a small sample of Examining Officers at RAF Terminal units has provided agreement that CATCS teaching represents 'best practice'.

The A300 can first be seen on the radar replay at 1506:40, 2.1nm WSW of BZN indicating 1900ft, which is equivalent to 1700ft BZN QFE or 2000ft QNH. The radar replay shows the A300's SFL [Mode S derived Selected Flight Level] to have been set to FL80; however, Mode S is not available on the BZN radar and controllers therefore do not have access to SFL. At 1506:48 the radar replay shows the A300 had commenced a right turn to OSGOD, 2.5nm WSW of BZN, indicating 2500ft (2300ft BZN QFE or 2600ft QNH); this is later than required by the OSGOD SID described at above.

APP stated (in a conversation after he had completed his report) that, given the high workload for aircrew on departure, pilots who are instructed to level at 2500ft or below are not routinely asked to verify their Mode C, this being done when they report level. APP reported and confirmed subsequently, that, once the A300 was on freq, his focus was on determining how to climb the ac from beneath the Chinook, while avoiding and then climbing over the previously coordinated LARS traffic. Having decided to vector the A300 to the N to facilitate a further climb, in order to verify the A300's SSR Mode C and to confirm that they were above the TSL, he requested (at 1506:48) the A300's passing altitude. The pilot replied that they were, *"now above two thousand nine hundred and now setting the standard altimeter"*; APP immediately replied, *"A300 C/S your climb out restriction was two thousand two hundred feet, avoiding action stop climb immediately, turn right heading zero-two-zero degrees"*. At that point, the radar replay shows the Chinook 0.9nm NW of the A300, tracking W, with the A300 indicating 2800ft (2600ft BZN QFE or 2900ft QNH), tracking 300° to OSGOD.

At the end of APP's avoiding action instruction, the A300 replied at 1507:04 that they were, "*now above three thousand four hundred and right heading zero-two-zero confirm"*. At that point, the radar replay shows the Chinook to be 0.7nm N of the A300, continuing to track W with the A300 indicating 3200ft (3000ft BZN QFE), tracking 300°.

As stated by APP in his report and recorded on the tape transcript at 1507:08, APP leaned over to the [trainee] DIR and told him to tell the Chinook that, "*He's [the A300] gone right through his [the Chinook] level, tell him [the Chinook] about the [A300 C/S]*". Co-incident with the end of this warning, the A300 transmitted at 1507:11, *"TCAS call, so we are climbing"*. At 1507:12, DIR issued a warning to the Chinook stating, *"the A three hundred has gone through his level, he's one mile south of you, north-west bound, indicating one thousand one hundred feet below".* At that point, the radar replay shows the A300 to be 0.6nm SE of the Chinook, indicating 200ft below. The Chinook crew acknowledged the TI.

At 1507:16, with the A300 and Chinook indicating co-altitude on the radar replay, APP asked the A300, *"can you see the helicopter in your one o'clock by half a mile?"* and the pilot replied *"yeah we have it in sight...".* At 1507:25, DIR updated the TI to the Chinook stating, "*that traffic's now above you by two hundred feet*" with the Chinook crew replying at 1507:31 "*that's copied, we're visual, he went quite close over the top of us then*".

The CPA occurred at 1507:30 as the A300 passed approximately 500ft over the Chinook.

The immediate cause of this Airprox was the climb by the A300 above the climb-out restriction imposed by APP; however, to explain why that occurred would require access to the A300 crew which is outwith the mandate of BM SM and will be addressed in the parallel UK AAIB investigation.

A review of CAP413, the Manual of Military Air Traffic Management, RAF ATM Force Orders, CATCS teaching, liaison with RAF ATM STANEVAL and a straw-poll of ATM Examining Officers was conducted. This showed, as highlighted above, that significant discrepancies exist in terms of the phraseology to be used in the passing of climb-out restrictions to ac.

In terms specifically of the ATM aspects on the day of the incident and based upon the accepted standard of phraseology in use by RAF ATM terminal units, TWR and APP both acted correctly in passing the climbout restriction to the A300; moreover, the ADC should be commended for persevering with obtaining a readback of the climb out restriction from the A300 crew. APP, faced with a relatively complex task in facilitating the safe departure of the A300 against the Chinook and the LARS traffic, understandably focussed on planning, assuming that the A300 would adhere to the climbout restriction. Whilst hindsight and 'best practice' suggests that APP should have re-iterated the climb instruction to the A300 on the initial call, his stated priority was, understandably, providing the A300 with TI on the Chinook. Moreover, there is no clear regulatory guidance on this specific matter. Once APP noted that the A300 had climbed through 2200ft QNH, although his attempts to control the situation and ensure that DIR was apprised of the situation were commendable, given the A300's RoC, the opportunity for APP to avert the Airprox had been lost.

While the immediate cause of the Airprox was the A300's climb through the altitude assigned it by APP, based upon the anecdotal misunderstanding by the A300 crew of the phrase 'climbout restriction', this latent condition can be seen to have been the root cause.

SO1 ATM Regs at the MAA has undertaken to raise the issues identified with respect to CAP413 and 'climbout restriction' phraseology with the Phraseology Working Group.

BM SM has requested that RAF ATM Force Cmd liaises with RN Fleet ATM, BM SM, CATCS the MAA and the CAA to review CAP413 with regard to those issues identified with respect to 'climbout restriction' phraseology.

UKAB Note (1): Any small discrepancies in the timings of radar data are as a result the use of the recordings of different radar heads in different sections of the report. The timings on the RT transcripts accord with those on the Clee Hill Radar.

UKAB Note (2): The AAIB conducted an investigation of this occurrence under their remit to investigate serious incidents.

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 noted the AAIB report (AAIB Bulletin 7/2012, on their website: Air Accidents Investigation: July 2012) and agreed their findings.

The CAA AATSD Advisor informed Members that CAP413 promulgates jointly agreed civil/military RT phraseology. It was his view that, although there were significant mitigating factors, the incorrect phraseology had contributed to the incident. A civil controller Member opined that the RAF should address the issue that the controller used a phrase that is not in CAP413, not taught at CATCS but

appears to be widely used by RAF ATCO's and crucially by examiners. He opined that the phraseology 'after departure climb to altitude 2200', (due traffic... could be added as a nicety) is short and unambiguous. He went on to highlight the dangers to aircrew of not passing altitude and cleared level on departure. Another controller observed that, judging from the transcript, the crew were not native English speakers and emphasised the importance of the entire controlling team treating such crews with particular attention. Members were informed that foreign crews operate into Brize Norton as a matter of routine and the controllers are fully aware of the need to make due allowances for non-native English speakers. Members noted BM SM's comments (in the Part A above) regarding correct phraseology for 'departure restrictions' and accepted that the teaching for military controllers had been amended.

Members sympathised with the Brize Norton ADC and commended his persistence in attempting to get a correct readback of the A300's departure clearance; however a controller Member pointed out that controllers must persevere until a full and accurate readback of any clearance is received; this provides him with an indication that the crew have understood the message. An airline pilot Member agreed but added that there might have been a flight deck CRM issue as both pilots should understand and agree any clearance. Since the AAIB Report indicates that both pilots understood the term 'climbout restriction', it appeared that one or both of the pilots might have been distracted by the short, but unfamiliar, taxi pattern or by the reduced RW length. He also pointed out that when the TWR controller passed the climb-out restriction and had to persist to get the crew to acknowledge, he did eventually get the pilot to say *"yeah, two thousand two hundred feet copied"*. This then places a responsibility on the pilot to understand what he has acknowledged despite not repeating the words 'climb-out restriction'. A pilot should not repeat a set of numbers to ATC requesting a read back and then completely ignore them, without considering what they relate to. The pilot had a responsibility in this respect that he did not fulfil. The crew's subsequent climb above their cleared altitude was more likely to be as a result of what was happening on the flight deck than a misunderstanding of the 2200ft 'restriction'. CRM broke down for whatever reason.

A Controller Member highlighted the issue of the A300 crew not checking-in with APP correctly (CAP413 Chapter 3 para 1.4.1) and APP not querying the A300's passing and cleared level on departure because he thought the crew were in a high workload and it is not routine for ac below 2500ft to be asked. Since this was not commented on by BM SM he opined that there may be a local instruction that goes against requesting a crew on departure to report their passing level if they do not pass it. Finally he commented that APP passed traffic info on first contact to the A300, rather than check passing level. He opined that RAF ATCO's need to adopt a more 'defensive controlling' attitude and prioritise their workload better; the first thing should have been to check the level passing and confirm to what level the ac was climbing. Once this is checked the TI becomes more relevant and accurate.

Putting all these factors together the Board agreed that there had been a chain of events leading to the A300 climbing through the altitude assigned by Brize Norton ATC. The crew did not assimilate the climb out restriction of 2200ft [although the AAIB report stated that they were aware of the intended meaning of the phraseology] and the ADC did not persevere in his efforts to make the crew read back the instruction in full. Once airborne the A300 crew did not confirm their cleared altitude when they checked in and the APP did not challenge the crew's understanding of their cleared altitude. Once this final barrier had been breached the high climb rate of the A300 left no time for further intervention by ATC.

In assessing the risk Members looked at the barriers remaining to prevent a collision. Both the APP controller and the Chinook crew detected the confliction too late to affect the outcome. However, the A300 crew first saw the Chinook at a range of 1900m, then reacted correctly to their TCAS warning. A majority of Members considered the resulting separation was less than optimum, with the A300 climbing through the Chinook's level at a range of 850m; at the CPA in azimuth of 100m, the A300 was 500ft above the Chinook. Nevertheless, given the A300 crew's visual sighting and correct

response to TCAS, Members were satisfied that the risk of actual collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The A300 crew climbed above the altitude assigned by Brize Norton ATC.

Degree of Risk: C.

Contributory Factors: The use of non-standard RT phraseology.