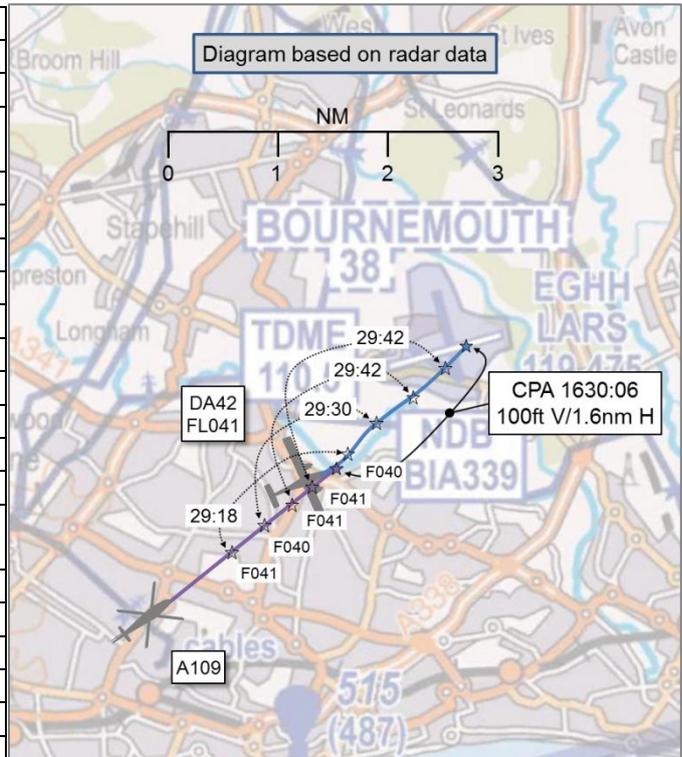


**AIRPROX REPORT No 2015029**

Date: 26 Mar 2015 Time: 1630Z Position: 5045N 00153W Location: 2nm SW Bournemouth airport.

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	A109
Operator	Civ Trg	MoD ATEC
Airspace	Bournemouth CTR	Bournemouth CTR
Class	D	D
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	Bournemouth	Bournemouth
Altitude/FL	4000ft	3900ft
ACAS/TAS	Not fitted	Other TAS
Alert	N/A	Information
Transponder	A/C/S	A/C/S
<b>Reported</b>		
Colours	NK	White
Lighting	NK	Nav, HISLs, Landing
Conditions	IMC	VMC
Visibility	>10km	NK
Altitude/FL	4000ft	3800ft
Altimeter	QNH	QNH
Heading	080°	050°
Speed	120kt	120kt
<b>Separation</b>		
Reported	NK	NK
Recorded	100ft V/1.6nm H	



**THE BOURNEMOUTH APPROACH RADAR CONTROLLER** reports that the DA42 was established in the BIA hold at 4000ft. The A109 pilot was on the Tower frequency for a ‘go-around’ having been issued with instructions for a standard missed approach. When he came back on the frequency after the ‘go-around’ the controller asked how many holds he required. He replied “1”. The controller then dealt with other inbound traffic. Subsequently, looking at the BIA hold the controller realised that the A109 was at 4000ft instead of 3000ft and following the DA42 about 2nm behind. Both were indicating 4000ft. An avoiding-action right turn heading 170° was issued to the A109 pilot. Because the pilot only replied “Roger” the instruction was passed again. Not receiving a sufficient reply the instruction was repeated for a third time, advising the pilot that a read-back was required. The pilot read back the heading. Traffic Information was then passed to the DA42 pilot. By this time the A109 pilot had turned and a further instruction to descend to 3000ft was given, which was read back. The pilot was reminded that the standard missed approach was only 3000ft.

**THE DIAMOND DA42 TWIN STAR PILOT** reports carrying out a training flight with one student on board, practising holds and approaches. As instructed by ATC they were maintaining 4000ft in the BIA holding pattern. They were aware of another aircraft (a helicopter) in the same holding pattern 1000ft below them. The weather was ‘post-frontal’, high cloud base with good visibility and northerly breeze. At altitude 4000ft they were in and out of a large cumulus cloud. At beacon inbound in the pattern they heard ATC giving an ‘avoiding action’ heading change to the helicopter pilot who did not initially respond/or responded incorrectly. Due to the fact he was in IMC and unable to locate the helicopter, and in Class D airspace under a Radar Service, he decided to remain in the holding pattern.

He assessed the risk of collision as ‘High’.

**THE AGUSTA A109 PILOT** reports that he was conducting Procedural IF continuation training at Bournemouth airport. The RHS pilot had conducted one NDB hold at 4000ft on the Bournemouth QNH plus an NDB procedure in bumpy conditions and a strong crosswind. The Missed Approach Procedure (MAP) was transmitted as "standard missed approach back to the hold" which was read back. During the missed approach, aircraft control was handed over to the LHS pilot in the climb to rejoin the hold via the BIA and carry out a further hold and procedure. The aircraft was climbed back towards 4000ft and flown towards the beacon to re-establish the hold. RT was busy, with a second aircraft joining the hold and numerous aircraft in the visual circuit and operating close to the Bournemouth CTR. At approximately 3700ft and 2nm from the beacon ATC requested their altitude which was replied "climbing to 4000ft on the Bournemouth QNH" at which point ATC instructed "Avoiding action, turn right 170 immediate" which was acknowledged and carried out. ATC informed the crew that the standard missed approach procedure was to join the beacon at 3000ft and that there was a second aircraft already in the hold at 4000ft. The aircraft was repositioned at 3000ft under ATC control and the hold and procedure carried out in accordance with published procedures. It is clear that the mistake lay with the crew erroneously assuming that "Rejoin the hold" implied a rejoin at the previous altitude. This was unfortunately reinforced by ATC chatter to other aircraft that there was a holding aircraft at 3000ft which we assumed was the second aircraft that had just joined, in fact that was holding at 4000ft. Workload in the cockpit was moderately high due to the bumpy conditions and, although the TAS was apparently operating correctly, it was not part of the instrument scan. Once the proximity of the other aircraft was realised and avoiding action had been taken, the TAS was observed to indicate 100ft vertical separation against only Proximate Traffic (suggesting that the aircraft never came closer than 0.55nm or 30sec); no TA was seen. On return to base, the aircraft commander called Bournemouth ATC to discuss the incident and, although it was fairly clear where the fault had lain, the controller admitted also being distracted by additional traffic close to infringing controlled airspace and was late in spotting the potential collision; however, once spotted, the actions of the controller were exemplary with clear and prompt avoiding action.

He assessed the risk of collision as 'Low'

## Factual Background

The Bournemouth weather was:

METAR EGHH 261620Z 30014KT 9999 FEW038 12/04 Q1009=

## Analysis and Investigation

### CAA ATSI

CAA ATSI had access to Bournemouth RTF and area radar recordings together with reports from both pilots and the Bournemouth controller.

The DA42 pilot was operating IFR from Bournemouth on a training flight practising holds and approaches in receipt of a Radar Control Service from Bournemouth Radar. The A109 pilot was conducting IFR instrument training at Bournemouth and was also in receipt of a Radar Control Service from Bournemouth Radar. Following an NDB approach, the A109 pilot had been advised that, after the go-around, to carry out a standard missed approach procedure. An extract from the UK AIP Page AD 2-EGHH-8-8 (12 June 2014) describes the missed approach procedure as:

'Continuous climb to **3000**. Initially, on **NDB (L) BIA** QDM 253° to **I-BH DME 4 (1500** if no DME). Then climbing left turn to **NDB (L) BIA** to hold at **3000** or as directed'.

An extract from the page is shown below. (Figure 1.)

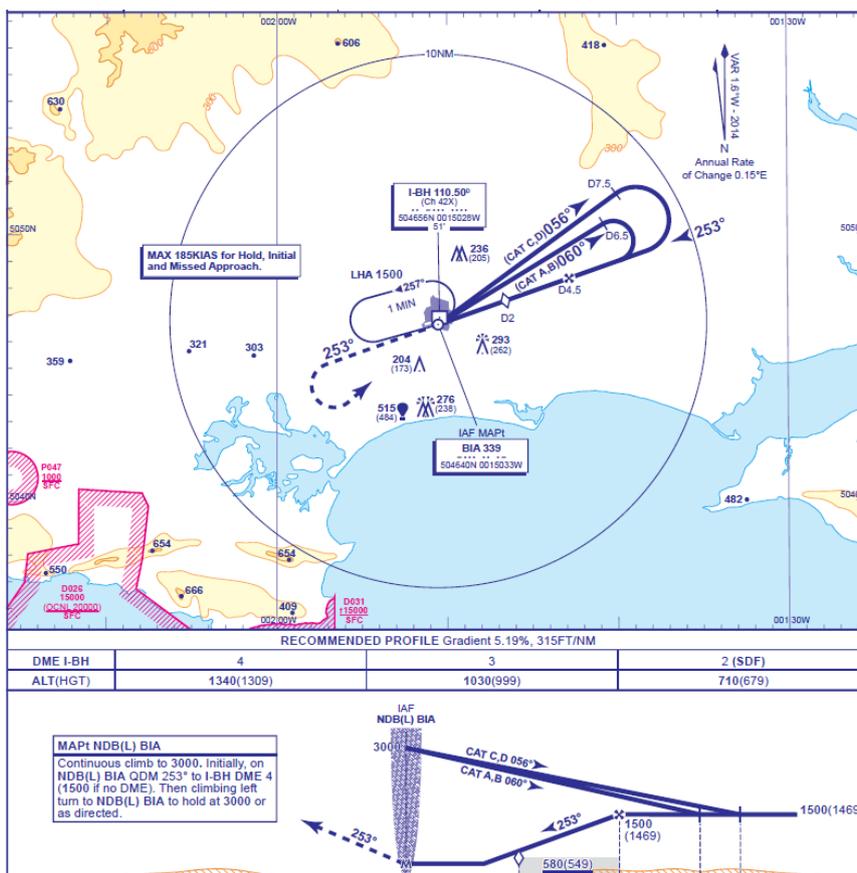


Figure 1 – Extract taken from UK AIP Page AD 2-EGHH-8-8 NDB (L)/DME RW26

The A109 pilot had earlier requested a hold followed by an NDB (L)/DME RW26 approach. At 1612:30 the A109 pilot was holding at the BIA (NDB) at 4000ft and the pilot reported ready for the approach:

- A109 *“Radar (A109 C/S) er westbound er for the final time for the approach”.*
- ATC *“(A109 C/S) maintain altitude four thousand feet on reaching the Bravo India Alpha proceed outbound for the approach report Bravo India Alpha outbound”.*
- A109 *“Maintaining four thousand feet until the Bravo India Alpha and then may continue with the approach er after the Bravo India Alpha er we’ll call (A109C/S)”.*
- ATC *“That’s correct affirm after the go around just confirm you want to go back to the hold again”.*
- A109 *“Affirm (A109 C/S)”.*
- ATC *“(A109 C/S) roger after the go around Standard Missed Approach”.*
- A109 *“After the go around Standard Missed Approach (A109 C/S)”.*

At 1614:50 the A109 pilot reported outbound for the procedure and was instructed to descend with the procedure and report base turn complete.

At 1617:10 the DA42 was 18nm west of Bournemouth at FL50 and the pilot requested a routing to the BIA (NDB) for one or two holds followed by an NDB approach. The controller cleared the DA42 pilot to the BIA (NDB) at 4000ft.

At 1619:20 the A109 pilot reported ‘base turn complete’ and the controller transferred him to the Bournemouth Tower frequency. After the go-around the A109 pilot was transferred back to radar.

At 1624:36 the A109 pilot contacted radar (but incorrectly addressed Boscombe):

A109 *“Boscombe Radar (A109 C/S) conducting a Missed Approach Procedure climbing back to the Bravo India Alpha”.*

ATC *“(A109 C/S) this is Bournemouth Radar but roger report taking up the hold”.*

A109 *“Wilco (A109 C/S)”.*

At 1624:52 the DA42 pilot reported taking up the hold at 4000ft and the controller asked him to report when westbound ready for the procedure.

At 1626:09 area radar showed the A109 passing FL27 (2600ft) and the DA42 taking up the hold at FL41 (4000ft). (Figure 2.)

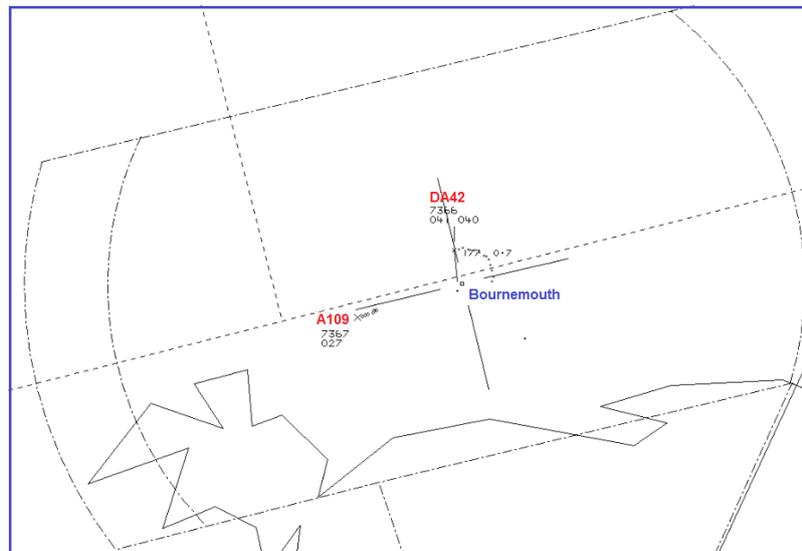


Figure 2 – Swanwick MRT at 1626:09

At 1626:10 the controller transmitted:

ATC *“(A109 C/S) how many more holds do you require”.*

A109 *“Er (A109 C/S) er we’ll join the hold and go round er once more and then outbound for the procedure”.*

ATC *“(A109 C/S) roger is it another NDB you’re looking for”.*

A109 *“(A109 C/S) affirm”.*

The controller had an expectation that the A109 pilot would return to the BIA (NDB) hold at 3000ft in accordance with the published missed approach procedure. The controller was then distracted in a discussion with an aircraft which had been operating close to the boundary of controlled airspace due to a problem with GPS and which then advised approaching Sandbanks for joining instructions. Area radar showed that the A109 pilot had continued in the climb above 3000ft and, at 1628:34, the A109 was in a left turn towards the BIA (NDB). Both the A109 and DA42 were now indicating FL41 (4000ft). (Figure 3.)

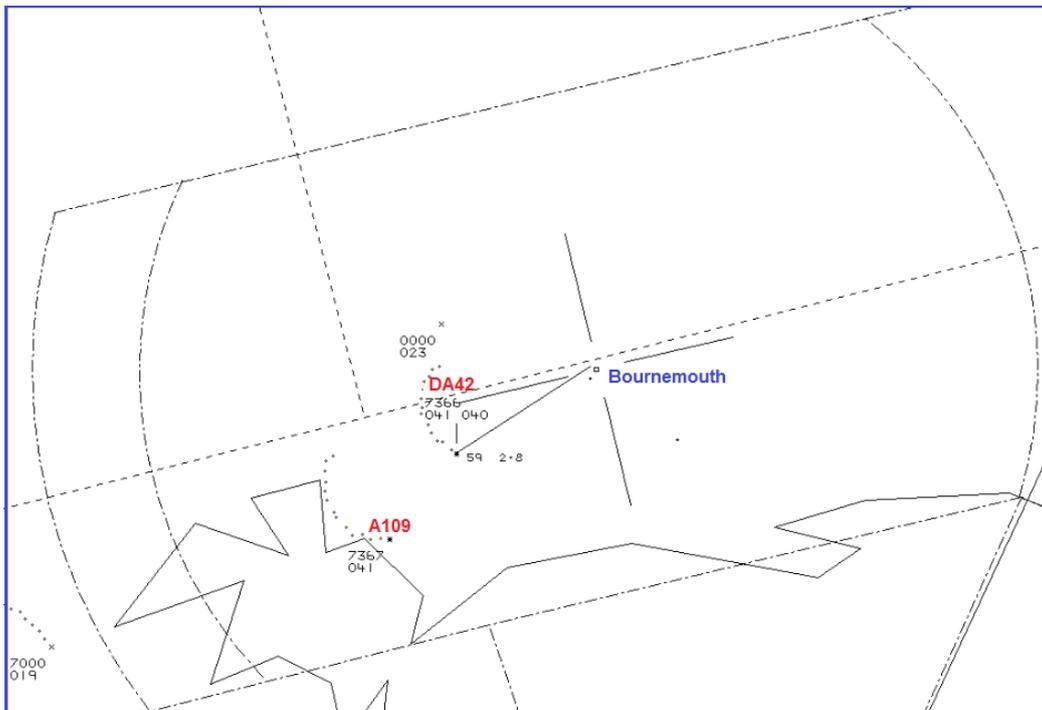


Figure 3 – Swanwick MRT at 1628:34

Meanwhile the controller was transmitting Traffic Information and joining instructions to the aircraft at Sandbanks. The controller's written report indicated that, at this point, the controller had looked at the traffic in the hold and observed that the A109 was at 4000ft. At 1629:40 the controller transmitted:

ATC "(A109 C/S) *Bournemouth*".

A109 "(A109 C/S) *go*".

ATC "(A109 C/S) *confirm your altitude*".

A109 "*Er four thousand feet one zero zero nine (A109 C/S)*".

ATC "(A109 C/S) *avoiding action turn right immediately heading one eight zero degrees traffic in the hold similar level four thousand feet ahead of you three miles*".

A109 "(A109 C/S) *turning right*".

ATC "*Heading one seven zero degrees*".

A109 "(A109 C/S)".

ATC "*Read the c - heading back please*".

A109 "*One seven zero (A109 C/S)*".

At 1630:08 the A109 pilot commenced the right turn. The horizontal distance between the two aircraft was 1.6nm (CPA) and the vertical distance was 100ft. (Figure 4.)

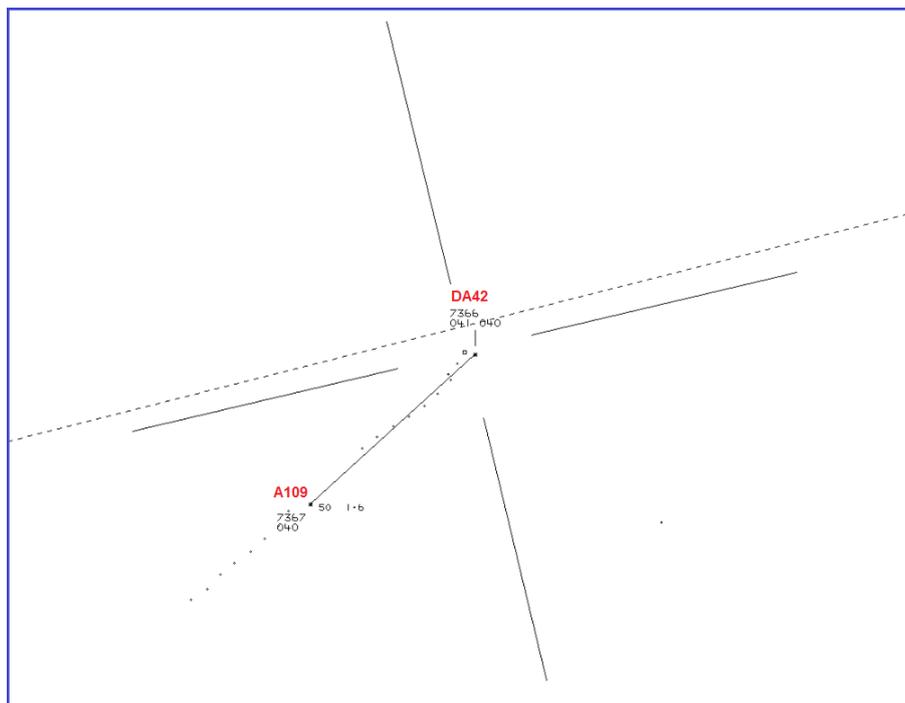


Figure 4 – Swanwick MRT at 1630:08

At 1630:14 the two aircraft begin to diverge. (Figure 5.)

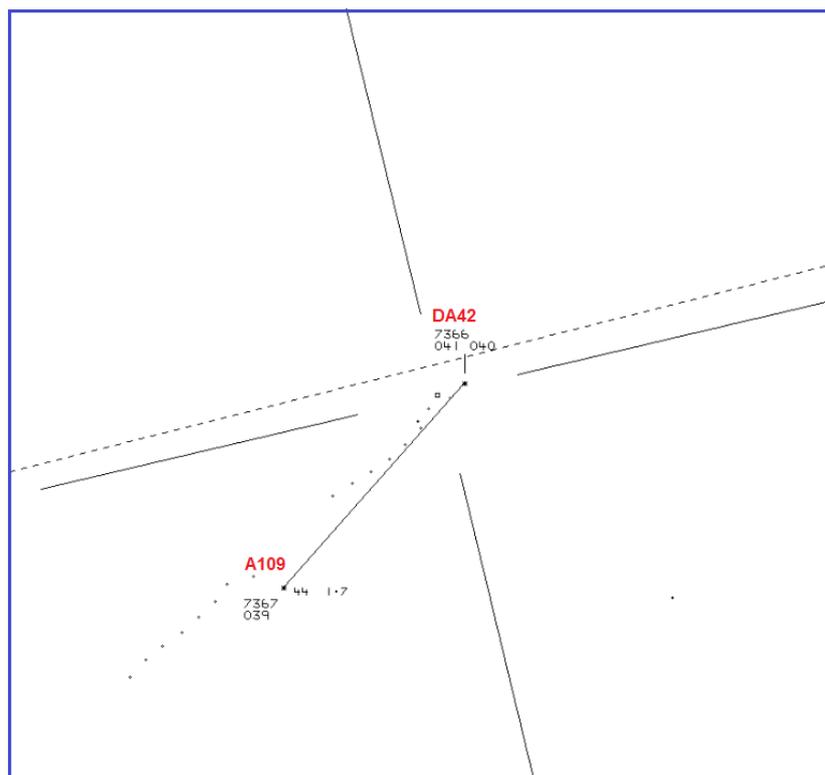


Figure 5 – Swanwick MRT at 1630:14

The controller passed essential Traffic Information to the DA42 pilot regarding the A109 heading south descending from 3700ft.

The A109 pilot descended to three thousand feet and returned to the BIA (NDB). The two aircraft then continued without further incident.

Both pilots were operating IFR and were in receipt of a Radar Control Service within Class D controlled airspace, where the controller is required to separate IFR flights.

The A109 pilot was training and planned a go-around before returning to the NDB hold. The controller had advised “*after the go around standard missed approach*” and an aircraft on an instrument approach is to carry out the published missed approach procedure unless instructions are issued to the contrary<sup>1</sup>.

The Published Missed Approach Procedure for NDB (L)/DME RW26 is:

‘Continuous climb to 3000. Initially, on NDB (L) BIA QDM 253° to I-BH DME 4 (1500 if no DME). Then climbing left turn to NDB (L) BIA to hold at 3000 or as directed.’

The pilot should have followed the missed approach procedure and it was not clear what caused the A109 pilot to incorrectly assume that he should return to the NDB climbing to 4000ft. The A109 pilot had been aware of the DA42 holding but believed it was at 3000ft, although the DA42 pilot was on frequency and had reported entering the hold at 4000ft.

The controller had the expectation that the A109 pilot would conduct the published missed approach procedure returning to the hold at 3000ft. Under some circumstances, controllers may consider it prudent to inform a pilot of other traffic which are separated<sup>2</sup>. However the controller had not considered that separation would be eroded and likely did not believe there was a need to pass Traffic Information. The controller then became focussed on another aircraft at Sandbanks, and the early opportunity to detect the conflict was missed. As soon as the controller became aware of the two aircraft in proximity, appropriate and immediate avoiding action was given<sup>3</sup>.

‘If, for any reason, a controller is faced with a situation in which two or more aircraft are separated by less than the prescribed minima he is to:

- (1) use every means at his disposal to obtain the required minimum with the least possible delay; and
- (2) when considered practicable, pass traffic information if an ATS surveillance service is being provided, otherwise, pass essential traffic information’.

## UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>4</sup> The DA42 pilot would not have been aware of the proximity of the A109 as it was directly behind his aircraft and there was no indication on the frequency that its pilot was climbing to his altitude in the holding pattern.

## Comments

### HQ Air Command

The A109 pilot acknowledges his own shortcomings in this Airprox and there is little to be gained from reiterating what he has already stated. Nonetheless, there are lessons to be drawn from this incident, not least of which is that all pilots and controllers should be on their guard for the onset of complacency. Human Factors played a large part in this Airprox – the pilot believed he heard ‘back to the hold’ in his instructions from ATC (the RT transcript suggests otherwise) which may have led him to think that he was to proceed ‘back to where you started from’; it may help to understand what he would *normally* be cleared to do during a similar procedure at his home unit.

<sup>1</sup> CAP 413 Page 26, Paragraph 4.65.

<sup>2</sup> MATS Part 1, Section 1, Chapter 6, Paragraph 16.2.

<sup>3</sup> MATS Part 1, Section 1, Chapter 3, Paragraph 3C1.

<sup>4</sup> SERA.3205 Proximity.

The controller is to be commended for his insistence on the reading back of the avoiding-action heading, and all pilots should note that what may appear to one party to be 'succinct' (and, incidentally, not in accordance with published regulations) usually induces doubt in the mind of another party, leading to higher than necessary levels of RT.

## Summary

The Airprox occurred within Class D airspace of the Bournemouth CTR between an A109 helicopter and a DA42; both pilots were in receipt of a Radar Control Service. The A109 pilot did not follow the published missed approach procedure to return to the NDB beacon at 3000ft but climbed to 4000ft which brought the A109 into conflict with the DA42, which was established in the hold at 4000ft. The controller had become distracted at the time that the A109 pilot climbed above 3000ft but, as soon as the controller recognised the conflict, immediate avoiding action was given to resolve the situation. The minimum separation was recorded as 100ft vertically and 1.6nm horizontally.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

The Board first discussed the actions of the Bournemouth Radar controller. The Board noted that he had cleared the A109 pilot for a standard missed approach to return to the holding pattern following his go-around. The Board was aware that the published procedure was to return to the beacon at 3000ft, and the controller had every expectation that this would be the case. Notwithstanding, and although not a requirement, given that the A109 was not a Bournemouth-based aircraft several Civil ATC members considered that it would have been good practice for the controller to have added the cleared altitude for the go-around when issuing this clearance; i.e. "*...after the go-around, Standard Missed Approach to 3000ft*". This would only have been a short addition to the length of the RT call, and would have acted as a timely reminder to the pilot, thus probably avoiding the Airprox occurring. However, other ATC members opined that it was not necessary to pass the altitude and that the pilot should have been aware of the procedure and its associated altitude having covered the issue during his pre-flight briefing. They further opined that to do so could, in some cases, even be a distraction to the pilot. A Civil Airline Pilot member commented that, from his experience operating into many airfields, mention is not usually made about the cleared altitude when a clearance is issued for a standard missed approach; furthermore, when one is mentioned, it can introduce an element of doubt that the cleared altitude may have been amended from the standard. The Board was split over this issue: one camp considered that the call of MAP altitude would have been useful given that this was not a commercial aircraft with all the back-up flight navigation systems that commercial aircraft might have; the other camp thought it best not to duplicate information that was published as standard and of which the pilots should have been aware.

Turning to the actions of the pilots, the Board quickly determined that the DA42 pilot would not have been aware of the A109 pilot's intentions given that his clearance to enter the hold at 4000ft had occurred about 4 minutes after the standard missed approach clearance had been passed to the A109 pilot. As for the A109 pilot, the Board commended him for his frank and honest report. They reflected that the incident probably indicated that the A109 crew's pre-flight and previous approach briefings had not been comprehensive in attending to the detail of the MAP. It was clear that there had been an assumption in their minds that the MAP hold altitude was the same as their initial hold altitude, and that this was the root of the incident. The Board also noted that the A109 pilot was on the same frequency as the DA42 when its pilot was cleared to enter the hold at 4000ft. That the A109 crew did not assimilate this themselves from the RT was probably indicative of a high cockpit workload wherein changes of Pilot Handling, associated cross-cockpit briefings, and the busy RT chatter may have caused the crew quickly to reach capacity.

The Board quickly decided that the cause of the Airprox was that the A109 pilot had flown into conflict with the DA42. They further quickly agreed that, fundamentally, this had occurred because of the contributory factor that he had not flown the MAP to the correct published altitude. The Board then

turned its attention to the risk, and opined that it was fortuitous that the A109 pilot had, by happenstance, entered the hold sufficiently behind the DA42 to avoid a collision. Nevertheless, the Board considered that the action taken by the controller had been sufficient to ensure that any further collision risk was removed; consequently, the Airprox was categorised as risk Category C.

Having spotted that both aircraft were unexpectedly in the hold at 4000ft, and having rapidly issued an avoiding-action turn to the A109 pilot, the Board commended the controller for not only noticing the conflict and taking appropriate action, but also for persisting in ensuring that the A109 pilot read-back the avoiding action instruction.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: The A109 pilot flew into conflict with the DA42.

Contributory Factor: The A109 pilot did not fly the published missed approach procedure.

Degree of Risk: C.