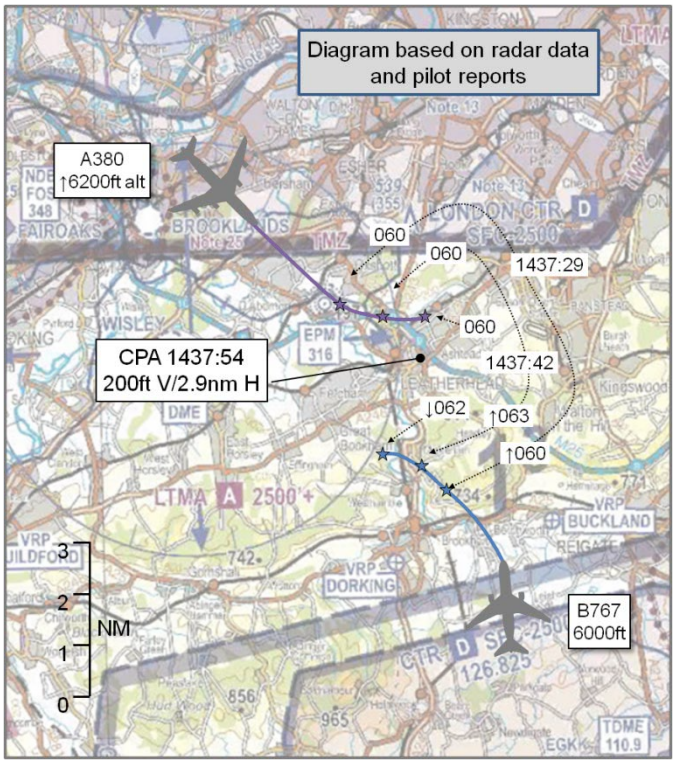
AIRPROX REPORT No 2016130

Date: 05 Jul 2016 Time: 1438Z Position: 5117N 00020W Location: 8.7nm NNW Gatwick airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	B767	A380
Operator	CAT	CAT
Airspace	London TMA	London TMA
Class	A	A
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	Swanwick TC	Swanwick TC
Altitude/FL	6200ft	6000ft
Transponder	A,C,S	A,C,S
Reported		
Colours	Company	Company
Lighting	NK	NK
Conditions	VMC	IMC
Visibility	NK	
Altitude/FL	4000ft	
Altimeter	QNH	
Heading	078°	
Speed	220kt	
ACAS/TAS	TCAS II	TCAS II
Alert	None	TA
Separation		
Reported	NK	NK
Recorded	200ft V/2.9nm H	



THE TC BIGGIN SECTOR RADAR CONTROLLER reports that the B767 pilot contacted him after departure from Gatwick on a LAM departure. He initially climbed it to 5000ft because there was an A380 outbound from Heathrow on a DVR departure. He then instructed the B767 pilot to head east and climb to FL130, which he read back. The aircraft appeared to be following his instructions when he was about to be relieved of his position. When he looked back at the radar display, the B767 pilot was turning onto a north-west heading, straight at the A380. He gave avoiding action to the B767 pilot of heading 270° and the A380 pilot 080°. This was working until the B767 pilot reported that he was visual with the traffic and continued on a heading of 310°. He instructed him to turn left onto 270° to try and maintain separation and questioned him with regards to his actions. He replied that he had input 090° originally but the aircraft computer then turned it onto 310°.

THE B767 PILOT reports that they were cleared to depart RW26L at Gatwick using the LAM 2X departure. It had an initial departure heading of 259° and by using LNAV/VNAV, it makes a right-hand turn to a heading of 078°. Quite quickly after making the turn London Control gave them a radar heading of 090°. At this point they were still in an LNAV/VNAV autopilot mode and, when they were given the radar heading, he selected HDG SEL which would now give them steering by their heading bug on the autopilot. At this point the workload was pretty high as they were retracting flaps and going through their after take-off regime. He had not had the opportunity to turn the heading bug to the new heading of 078° for the departure and it was still on 259° when they were given the radar heading of 090° by London Control. When he selected HDG SEL (heading select) the aircraft started to make a left-hand turn to 259° and, by the time he caught on to what it was doing, the aircraft was now heading 310° instead of the assigned 090° which put them into the path of departing traffic from Heathrow airport. London Control asked what they were doing and why were they heading 310°. The workload now became a bit higher as they were trying to figure out why the aircraft turned as it did. They certainly apologised and then London gave them a new radar heading of 270° degrees and

a climb to keep clear of traffic. It wasn't until they had levelled off at their cruise altitude and had some time to think about it that they realized what had happened and why.

He assessed the risk of collision as 'Medium'.

THE A380 PILOT reports that he had been unaware at the time that an Airprox had been filed. Only limited information could be reported as he had only been informed about it recently. He recollected receiving a TA and avoiding action from ATC. He did not see the other traffic because he was operating in IMC at the time.

The weather at Gatwick was recorded as follows:

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METAR EGKK 051420Z 33008KT 300V360 9999 SCT044 21/10 Q1019=
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Analysis and Investigation

CAA ATSI

ATSI had access to a report from the LTCC Biggin Sector controller, the area radar recordings, the NATS Initial Watch Management Report and a recording of the Biggin Sector R/T transmissions. Screenshots produced in this report are provided using the area radar recordings. Levels indicated are altitudes. All times UTC. The B767 (code 7214) was outbound IFR from Gatwick airport. The A380 (code 4716) was outbound IFR from Heathrow airport, both pilots were in receipt of a Radar Control Service from London Control.

At 1434:53, the B767 pilot having departed from RW26L at Gatwick airport contacted the Biggin Sector controller and reported climbing through 2000ft for 6000ft on the LAM2X Standard Instrument Departure (SID) (Figure 1). The Biggin Sector controller instructed the B767 pilot to climb to altitude 5000ft.

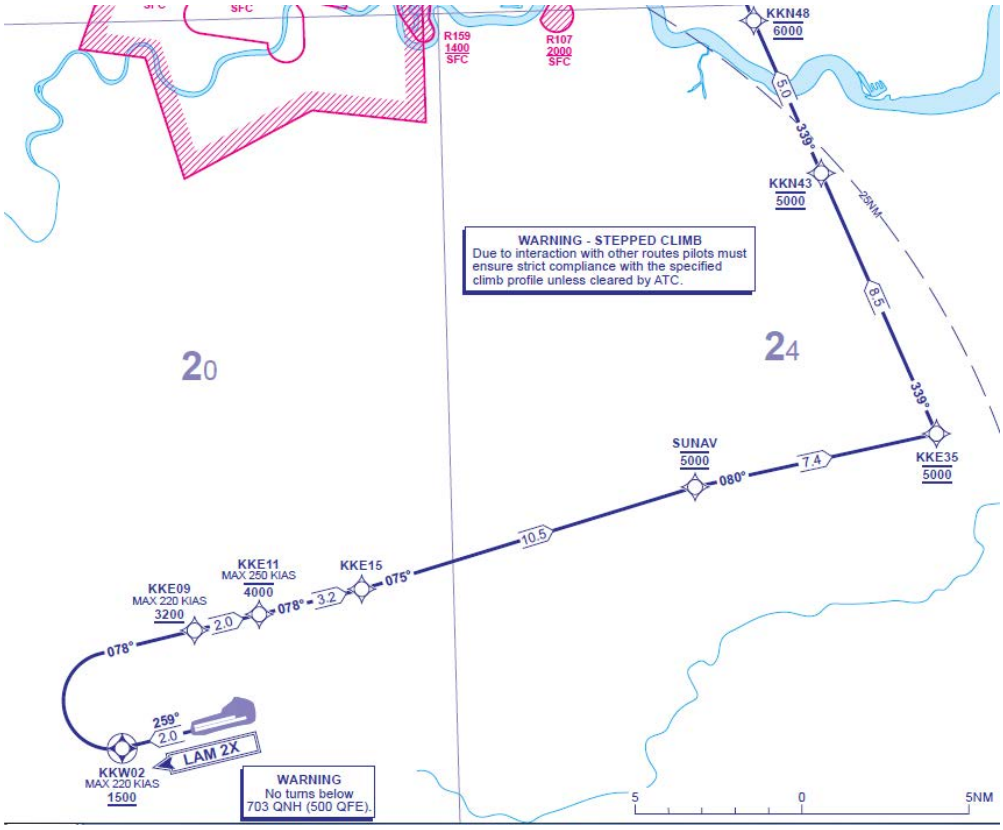

Figure 1 – UK AIP AD 2-EGKK-6-3 LAM2X SID.

At 1435:20, the A380 pilot, having departed from RW27L at Heathrow airport, called the Biggin Sector controller and reported climbing through 2600ft for Flight Level(FL) 060 on the DET2G SID (Figure 2). The Biggin Sector controller asked the A380 pilot to confirm that he was climbing to altitude 6000ft which was then acknowledged by the A380 pilot.

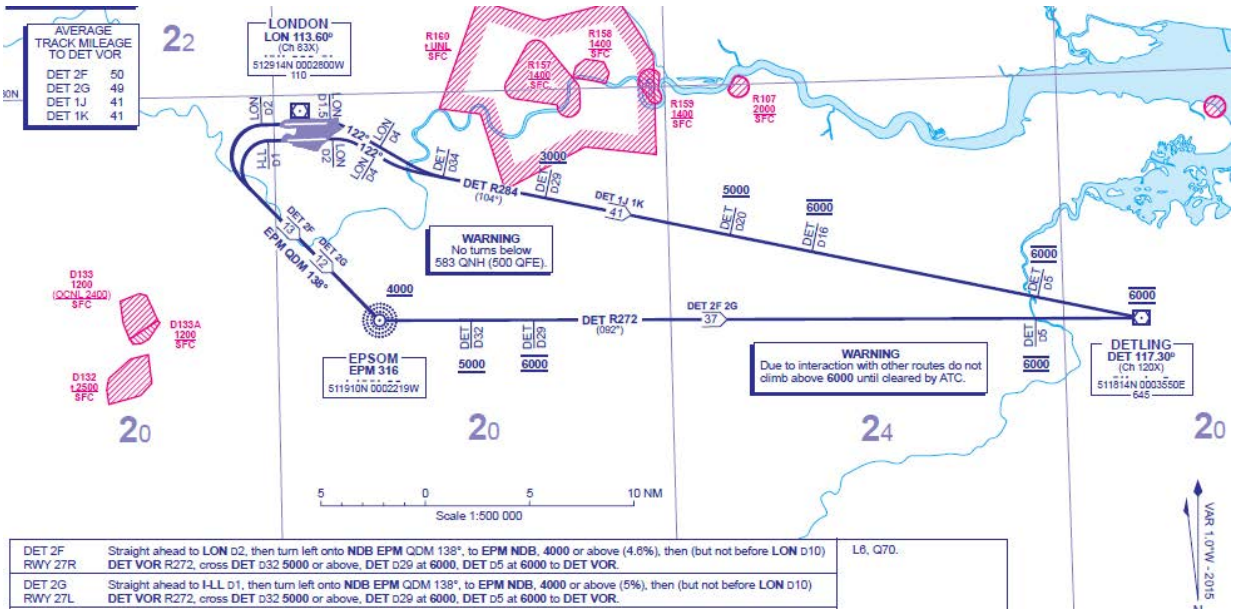

Figure 2 – UK AIP AD 2-EGLL-6-5 DET2G SID.

At 1436:09 (Figure 3), the Biggin Sector controller instructed the B767 pilot to fly heading 090° and climb to FL130. The B767 pilot read back the heading correctly but asked for the level to be passed once more. The Biggin Sector controller repeated the cleared Flight Level which was then correctly read back.

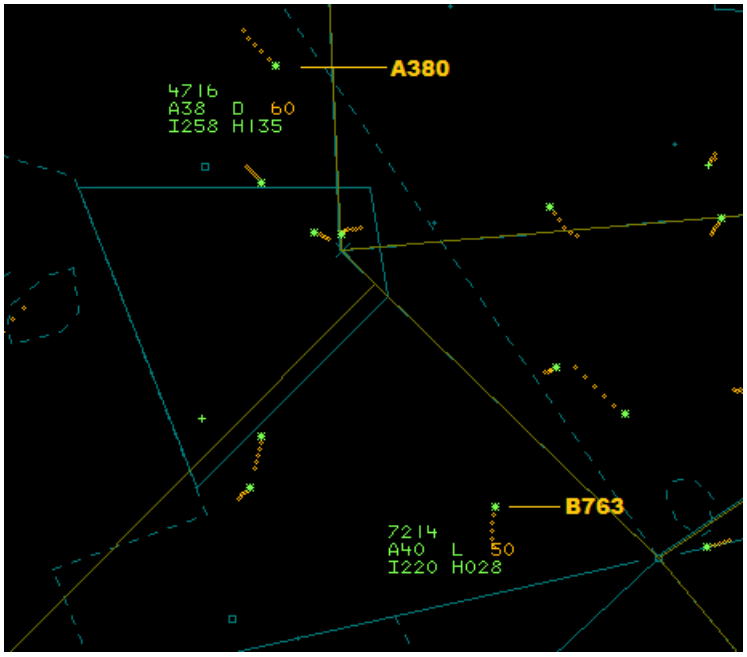

Figure 3 – Swanwick MRT at 1436:09.

At 1436:45 (Figure 4), the B767 had commenced a left-turn, the Mode S derived heading information indicated 037°. This was observed by the Biggin Sector controller and, at 1437:04, he transmitted the following to the B767 pilot: *"[B767 C/S] er where are you going you're meant to be right onto a heading of 090 can you er standby".*

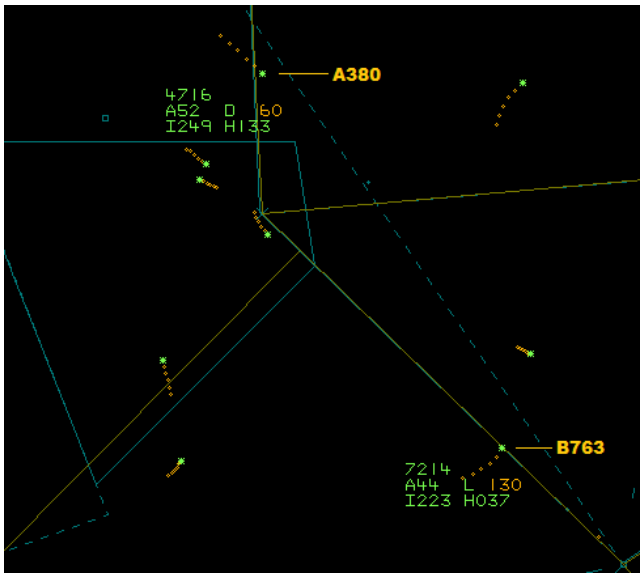

Figure 4 – Swanwick MRT at 1436:45.

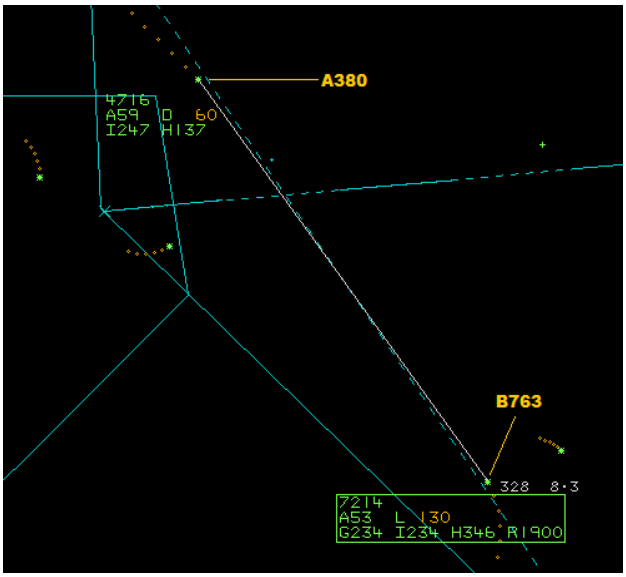

Figure 5 – Swanwick MRT at 1437:11.

At 1437:11 (Figure 5), the Biggin Sector controller issued an avoiding action turn to the A380 pilot transmitting *"[A380 C/S] turn left on to heading of zero eight zero this is avoiding action".*

At 1437:18 (Figure 6), the Biggin Sector controller issued an avoiding action turn to the B767 pilot transmitting *"[B767 C/S] heading two seven zero degrees avoiding action".*

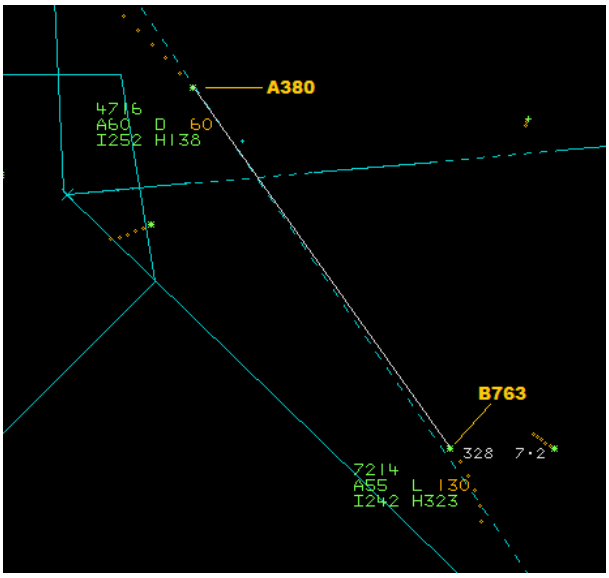

Figure 6 – Swanwick MRT at 1437:18.

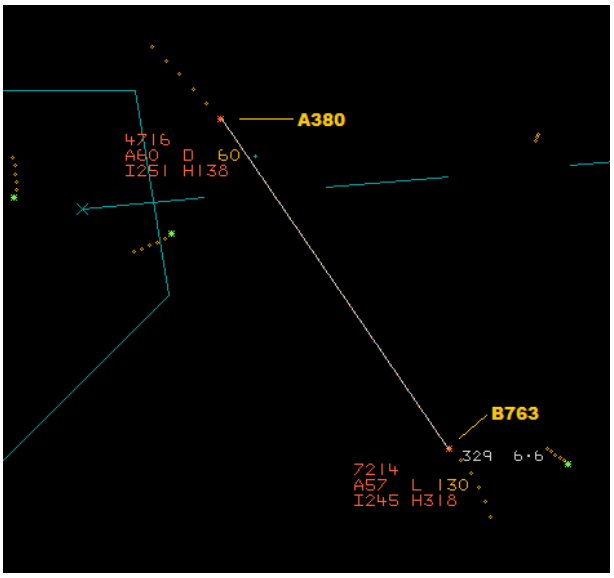

Figure 7 – Swanwick MRT at 1437:24.

At 1437:24 (Figure 7), the Short Term Conflict Alert (STCA) activated. At this time the horizontal distance between the B767 and the A380 was 6.6nm, the vertical distance was 300ft.

At 1437:26 (Figure 8), the B767 had reversed the left turn, the Mode S derived heading information indicated 323°. The Biggin Sector controller then transmitted the following to the B767 pilot: *"[B767 C/S] are you on a heading of 270?"*

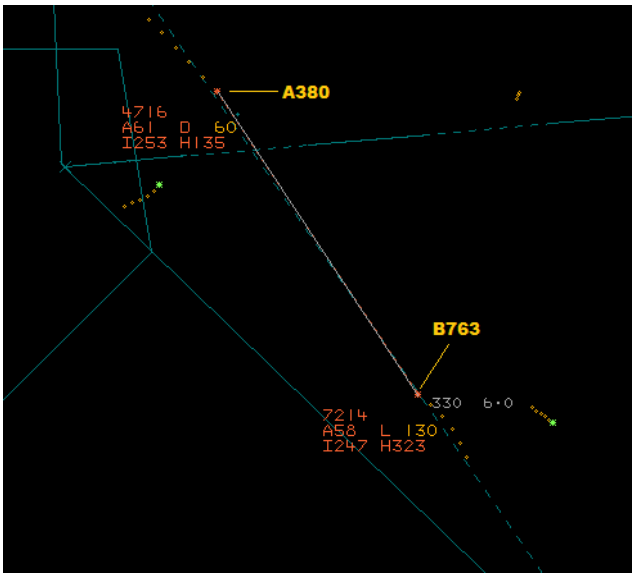

Figure 8 – Swanwick MRT at 1437:26.

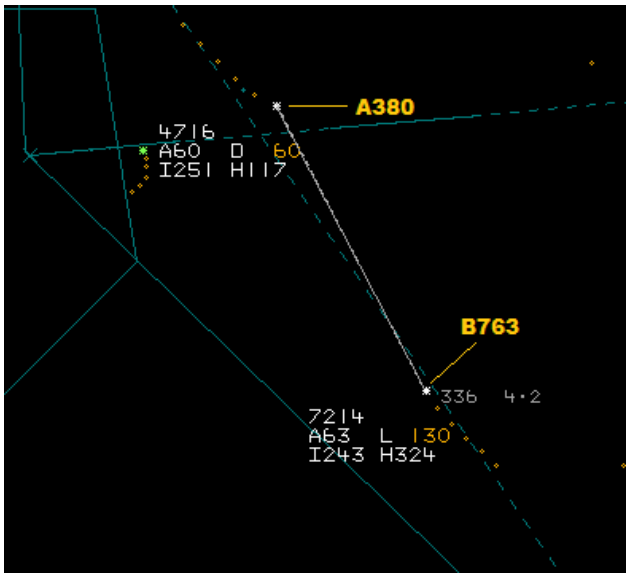

Figure 9 – Swanwick MRT at 1437:39.

At 1437:39 (Figure 9), the B767 pilot responded with *"310 [*heading] *we are turning left we have traffic in sight".*

At 1437:46 the Biggin Sector controller re-iterated the avoiding action turn instruction to the B767 pilot. He then read back "*we are in the turn for 270"*.

CPA occurred at 1437:54 (Figure 10), with a minimum horizontal distance of 2.9nm and a minimum vertical distance of 200ft.

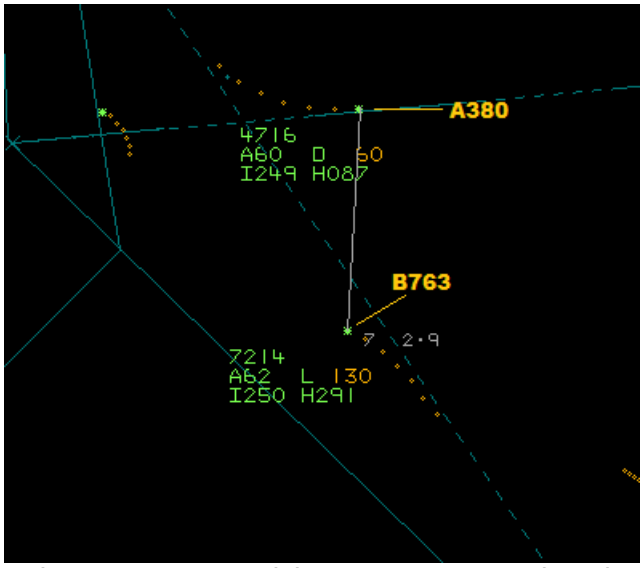

Figure 10 – Swanwick MRT at 1437:54 (CPA).

The published altitude of the LAM 2X SID is 6000ft with a stepped climb profile due to interaction with other routes. The Biggin Sector controller initially restricted the B767 pilot's climb to 5000ft against the A380 which was climbing to 6000ft on the DET 2G SID, the published altitude of which is also 6000ft.

When the Biggin Sector controller assessed that the B767 was ahead of the A380, he elected to take the B767 pilot off the SID, issued a radar heading of 090° and cleared the aircraft to climb to FL130. As the B767 pilot was established in the right turn onto the assigned radar heading, he then reversed the turn and was observed to turn left. The Biggin Sector controller's initial action was to challenge the B767 pilot's deviation from the assigned heading. Prudently, the controller

did not wait for an explanation from the B767 pilot and therefore instructed him to stand-by, before issuing an avoiding action turn to the A380 pilot of left onto heading 080°

The Biggin Sector controller then issued an avoiding action turn to the B767 pilot of left (the B767 was already established in a left-turn) onto 270°. Before establishing on the assigned heading however, the B767 pilot reversed the turn again and turned right. This action was challenged by the Biggin Sector controller, in response the B767 pilot reported that he had the traffic in sight, to which the controller reiterated the assigned heading. There was no reference to this in the B767 pilot's report; therefore, it is unclear what caused the B767 to turn right. The Biggin Sector Controller was providing a Radar Control Service to both the A380 and the B763 within the London TMA which is Class A (controlled) airspace. In this class of airspace, aircraft are required to comply with ATC instructions.

Although the Biggin Sector controller used the words 'avoiding action' when he issued the avoiding action turns to both the A380 and the B767 pilots, the standard avoiding action phraseology[1] was not used, and the word 'immediately' was omitted. Also, specific Traffic Information on the conflicting traffic was not passed to either aircraft. Avoiding action turns were issued by the Biggin Sector controller to both the B767 and the A380 pilots, however, the standard avoiding action phraseology was not used. The avoiding action turn issued to the B767 was not complied with when its pilot reversed the turn.

Although not a contributory factor in the Airprox, the Biggin Sector Controller stated in his written report that he was in the process of handing over the sector to a relief controller at the time the Airprox occurred.

The B767 pilot deviated from the assigned radar heading when the autopilot's HDG SEL mode was selected, this caused the aircraft to commence a left turn left onto a 'bugged' heading of 259°. The left turn brought the B767 into conflict with the A380 causing separation to be lost. [3nm and/or 1000ft.]

UKAB Secretariat

The B767 and A380 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[2].

'In Class A airspace all flights shall be subject to ATC clearance'.[3]

Summary

An Airprox was reported when a B767 and an A380 flew into proximity at 1438 on Tuesday 5th July 2016. The B767 pilot was operating under IFR in VMC, the A380 pilot was operating under IFR, in IMC. Both pilots were in receipt of a Radar Control Service from Swanwick TC. The B767 did not turn as instructed by ATC and came into proximity to the A380.

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.

Looking first at the actions of the B767 pilot, the Board wondered why he had not followed ATC instructions and had turned the wrong way. The Board noted that he had been following the LAM SID from Gatwick airport, had set the departure heading of 259° on his heading bug but had turned

[1] CAP 413 Chapter 5: Radar Phraseology paragraph 5.27.
'G-CD, avoiding action, turn left immediately heading 270 degrees traffic left 10 o'clock 5 miles converging indicating 3000 feet fast moving.'
[2] SERA.3205 Proximity.
[3] SERA.6001 Classification of airspaces.

onto the SID heading 078° using Lateral Nav and Vertical Nav (LNAV/VNAV) mode. When the controller instructed him to turn right onto 090° instead, he selected Heading Select (HDG SEL) which then brought the 'heading bug' into use on the autopilot. A Civil Airline Pilot member explained that part of the pilot's procedures should have been to check the 'heading bug' was set to the desired heading before selecting HDG SEL (i.e. to 090° rather than 259°). Recognising that the crew were reportedly under high workload at the time, the member also commented that reselecting Area Navigation (RNAV) would have at least got them turning back in the right direction once they noticed the problem without ATC having to intervene, but it was probable that the crew had lost situational awareness as to aircraft navigation mode and response at the time.

Of considerable concern to the Board, they noted that the B767 pilot had been given an avoiding action left turn onto 270° but the pilot had reported on frequency heading 310° with the A380 in sight. The Board was surprised that the pilot had not complied with the ATC instruction to complete the turn onto a westerly heading, especially because within CAS pilots must comply with ATC instructions. Moreover, the pilot reported that he had stopped his turn because he had become visual with the traffic but members commented that the pilot had probably sighted a different aircraft because the A380 pilot reported that he had been in IMC at the time. In any case, all of this highlighted the danger of pilots acting on their own visual interpretation of the situation, and the lack of compliance with ATC instructions was considered to be a contributory factor to the Airprox; it was considered that, had the pilot fully complied with his avoiding action instructions, standard radar separation of 3nm would probably have been achieved.

The Board were quick to commend the actions of the TC Biggin Sector Radar controller. Despite being in the process of handing over the sector, he quickly became aware of the unexpected turn made by the B767 pilot and issued appropriate and timely avoiding action to both pilots.

The Board then turned its attention to the cause and risk of the Airprox. It was quickly agreed that the Airprox occurred because the B767 pilot flew into conflict with the A380. That being said, the Board noted that, at CPA, the two aircraft were well separated, 200ft vertically and 2.9nm horizontally, and by this time they were also turning away from each other. Accordingly, it was judged that although safety had been degraded by the action of the B767 pilot, the avoiding action instructions issued by ATC had removed the possibility of a collision and so the Airprox was assessed as risk Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The B767 pilot flew into conflict with the A380.

Contributory Factor: The B767 pilot did not comply with ATC instructions in CAS.

Degree of Risk: C.