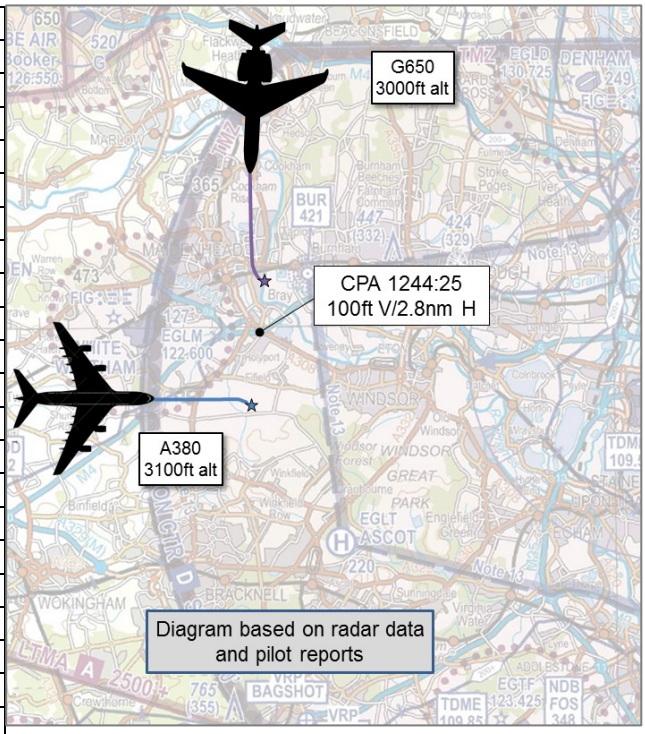
AIRPROX REPORT No 2016221

Date: 10 Oct 2016 Time: 1244Z Position: 5130N 00043W Location: 8.5nm W Heathrow

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	A380	G650
Operator	CAT	Civ Comm
Airspace	London TMA	London TMA
Class	A	A
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	Heathrow APP	Northolt APP
Altitude/FL	3100ft	3000ft
Transponder	A,C,S	A,C,S
Reported		
Colours	Company	NK
Lighting	Standard + Logo	NK
Conditions	VMC	VMC
Visibility	NK	NK
Altitude/FL	3000ft	1800ft
Altimeter	QNH	QNH
Heading	090°	NK
Speed	160kt	160kt
ACAS/TAS	TCAS II	TCAS I
Alert	None	None
Separation		
Reported	Not seen	NK V/2.7nm H
Recorded	100ft V/2.8nm H	



THE HEATHROW APPROACH FINAL DIRECTOR reports that the A380 was positioned as normal onto final for RW09L. As he was about to transfer the pilot to the Tower with spacing achieved and speed back to 160kt (full flap), he noticed the G650 on base leg for Northolt going through their centre-line at speed and not turning. It was pointing straight at the A380 at the same level. Avoiding action was given to the A380 pilot and he shouted to Northolt Control [also situated at Swanwick] to turn their aircraft, which they did. There was no separation loss [he recollected] but it would not have taken more than a few more seconds for it to be a very uncomfortable situation.

THE NORTHOLT APPROACH/DIRECTOR reports that she had just received a handover of the radar console from the off-going controller. She was informed that she had an aircraft (the G650) inbound for an SRA to the north-west of Northolt, a helicopter inbound on H9S, a BN2, and a Heli Med helicopter. She was about to sit down when another controller came in and started talking. Heathrow SVFR started to ring, along with Tower, and the off-going controller came back to inform her that he had forgotten to tell her about a helicopter transit on H10 (W), which would affect the ATZ. The off-going controller then stated 'have you turned that aircraft inbound'. In the short time that she had picked up the telephone, the inbound G650 had headed south of the centre-line and toward the Heathrow inbounds. She immediately gave an avoiding action turn of 060° to get the aircraft turning away. She was not satisfied that that would be enough so she gave [G650 C/S] further avoiding action "turn left now heading 030°" During this time she noticed that the Heathrow Director had also given avoiding action and turned his aircraft away to the south. She believed that her avoiding action was effective; the Short Term Conflict Alert was in white. She believed that she allowed herself to get distracted immediately after the handover. This incident has reinforced to her how imperative it is, especially after a handover, to go over all the information passed before picking up the telephone to another agency or listening to what is going on elsewhere.

She perceived the severity of the incident as 'High'.

THE AIRBUS A380 PILOT reports that he was on final approach to RW09L at Heathrow when ATC instructed them to turn right heading 180° for traffic separation. At the time they were at 3000ft, established on both localiser and glide slope, flaps 3, 160kt, gear up, visual. They complied, turning right and levelling at 3000ft. ATC subsequently advised that they had become concerned that a light aircraft from a field west of Heathrow under the approach path was getting a bit close to them. At no time did they see another aircraft nor were there any warnings from the TCAS. They were vectored around for a large orbit and rejoined the ILS for RW09L. On the ground, when he had the time, he made a PA to the passengers, and the CSM advised that nobody really knew that what had happened was out of the ordinary as they thought they were simply manoeuvring for their approach. There was no go-around thrust and the landing gear had not yet been selected down.

THE GULFSTREAM 650 PILOT reports that whilst receiving radar vectors from the Northolt Director the aircraft was allowed to impede the minimum separation allowance with an A380 on approach to Heathrow RW09L. The approaches advised as available from Northolt were either a Precision Approach Radar (PAR) or a Surveillance Radar Approach (SRA); with VMC conditions prevailing, he opted for a PAR to be flown to aid controller recency. Procedure minimums were verified and an initial vector of 180° was instructed, as usual taking the aircraft toward the approach path of Heathrow RW09L. When on track, it was expected that a further instruction would be issued to turn left to pick up the extended centre line of RW07 at Northolt. Traffic had been noticed on final approach to Heathrow RW09L, and 'solid blue' TCAS awareness diamonds were presented on the flight-deck screens. Whilst continuing on a southerly track, they considered taking self-instigated avoiding action but a call from ATC instructed an immediate left turn to an intermediate heading before correcting to fly radar heading 360°. No TA or RA warnings were generated but, whilst in the left turn, the A380 was observed making a right turn (south) off track. A further approach was flown; however, the instructions were as per an SRA with no confirmation of increased minima. On landing the crew made contact with the controller by telephone, during which it was confirmed that it was an ATC error and that contributing factors included a late shift change and that, despite being advised that the approach flown was to be a PAR, the PAR equipment was unserviceable. A fact detailed in subsequent ATIS broadcasts.

Factual Background

The weather at Heathrow was recorded as follows:

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EGLL 101220Z AUTO 35007KT 310V060 9999 BKN033 14/05 Q1026 NOSIG=
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Analysis and Investigation

CAA ATSI

The G650 pilot was being vectored by Northolt Radar for a PAR to RW07 at Northolt. The A380 pilot was descending on the Heathrow RW09L ILS, and was about to be transferred to Heathrow Tower by the Heathrow FIN controller.

There was then a change of controller at Northolt Radar. According to their report, the oncoming controller had been briefed on the traffic situation, including the inbound G650. They stated that they had been distracted by another controller and a subsequent telephone call. They then passed some instructions to another aircraft but, during that pilot's reply, they issued an avoiding action turn to the left to the G650 pilot, which had passed through the Northolt RW07 final approach area and was tracking towards the A380 on the Heathrow RW09L final approach (Figure 1 at 1243:55).

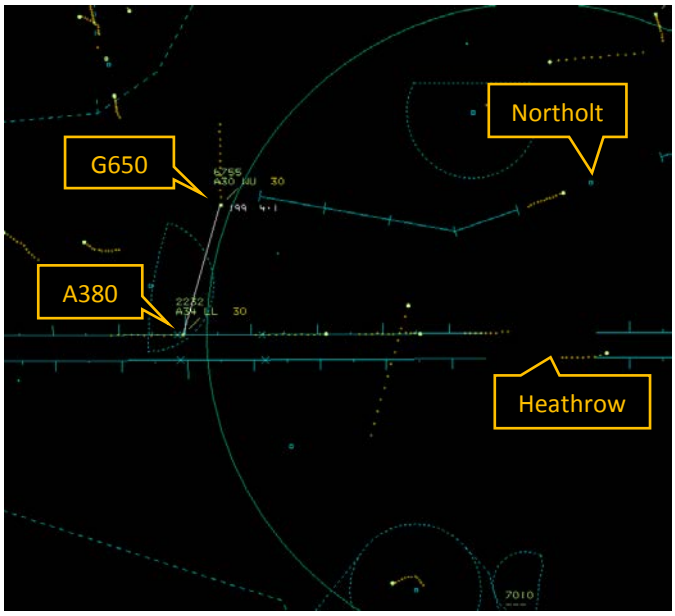


Figure 1 – 1243:55.

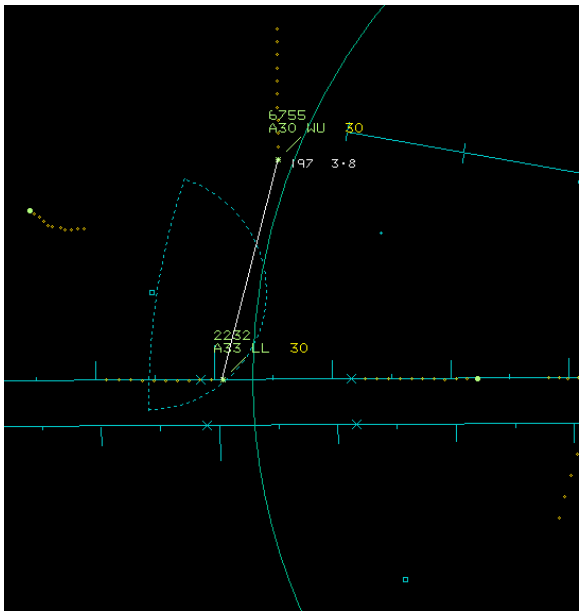


Figure 2 – 1244:00.

At 1244:00 the Heathrow FIN controller issued an avoiding action turn to the right onto a heading of 180° to the A380 pilot (Figure 2).

At 1244:13 the Northolt controller issued a further avoiding action turn to the left onto a heading of 360° (Figure 3).

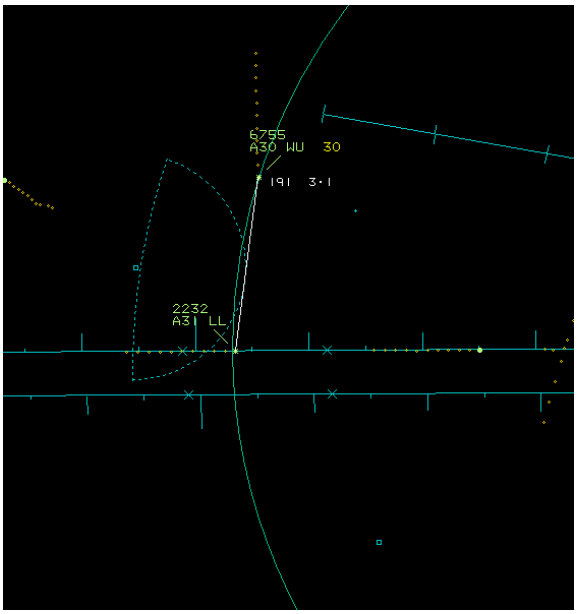


Figure 3 – 1244:13.

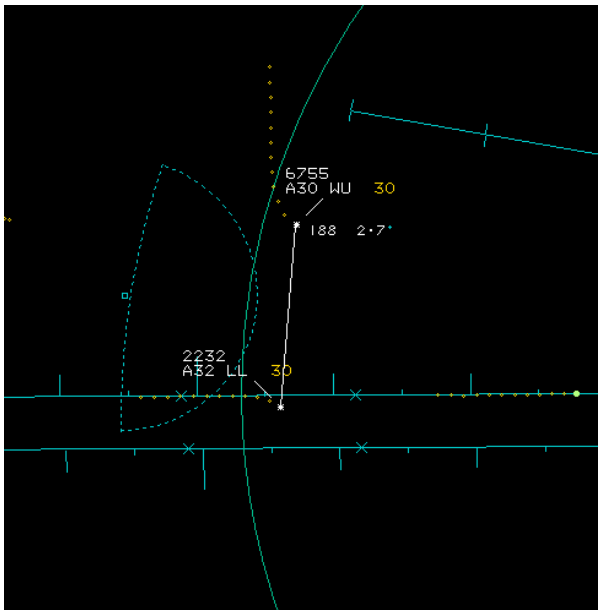


Figure 4 – 1244:23.

The CPA took place at 1244:23 with the aircraft separated by 2.7nm laterally and 200ft vertically (Figure 4). [Required separation was 3nm and/or 1000ft.]

It was noted that although both controllers subsequently took the appropriate action, the avoiding action phraseology was incomplete, with the word "*immediately"* having been omitted.

Military ATM

Portions of the tape transcripts between the Northolt Director and the G650 are below:

From	To	Speech Transcription	Time	Remarks
NHT DIR	G650	[G650 C/S] turn left heading 180 degrees.	12:42:19	
G650	NHT DIR	Left turn heading 180, [G650 C/S].	12:42:22	
		Handover occurs between radar controllers. All subsequent words marked as 'NHT DIR' are spoken by the oncoming controller.		
NHT DIR	HRW RDR	Approach.	12:43:05	Landline
HRW RDR	NHT DIR	Hello, what frequency do you want this [Helicopter C/S], he said that he was going to get back to me with a frequency.	12:43:06	Landline
NHT DIR	HWR RDR	Oh, OK, 126x45	12:43:09	Landline
HRW RDR	NHT DIR	That's what I thought. Cheers, ta.	12:43:11	Landline
Helicopter	NHT DIR	Northolt Approach, {Helicopter C/S] with you squawking 7041, north abeam Kew Bridge.	12:43:33	
NHT DIR	Helicopter	[Helicopter C/S] Northolt Approach good afternoon you're identified. Route H10, H9, standard operating altitudes, London QNH 1026. Radar control, VFR. Clearance limit Gutteridge please.	12:43:40	
Helicopter	NHT DIR	Clearance limit Gutteridge, H9, H……	12:43:52	
		Not captured on audio is the off going radar controller who is now acting in a supervisory capacity in the 'co-ordinator' position making the radar controller aware that she hasn't turned the G650 on to an easterly heading, and that the aircraft is still tracking south towards the Heathrow finals approach traffic.		
NHT DIR	G650	[G650 C/S] turn left heading 030 degrees, avoiding action turn left heading 030 degrees.	12:43:56	
G650	NHT DIR	Left 030 avoiding action, [G650 C/S].	12:44:00	
NHT RDR	G650	[G650 C/S] avoiding action turn left heading 360 degrees.	12:44:10	
G650	NHT RDR	Left 360, [G650 C/S].	12:44:16	

The radar analysis in Figures 5-8 shows the position of the G650 and the A380 at times when pertinent instructions were issued. The replays are taken from the Heathrow 10 radar feed, which was what was on the Northolt Director's screen at the time.

At 12:42:19 (Figure 5), the G650 pilot was instructed to turn left onto heading 180° as a standard base leg for RW07. The position was subsequently handed over to an on-coming controller, with the off-going controller remaining in the vicinity to act as a Coordinator.

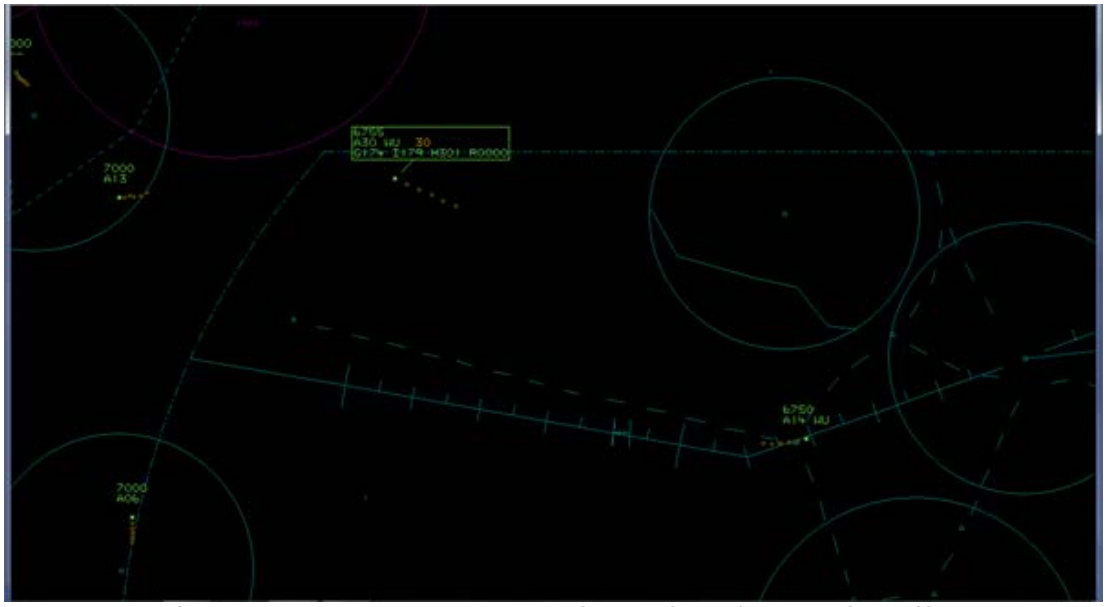


Figure 5: Geometry at 12:42:19 (G650 (6755); A380 (2232)).

At 12:43:06 (Figure 6), the Northolt Director answered a landline call from Heathrow Radar (SVFR), who requested a frequency for a helicopter (7041) in transit west towards the Northolt Radar Manoeuvring Area (NRMA) whose pilot would be utilising the heli-lanes.

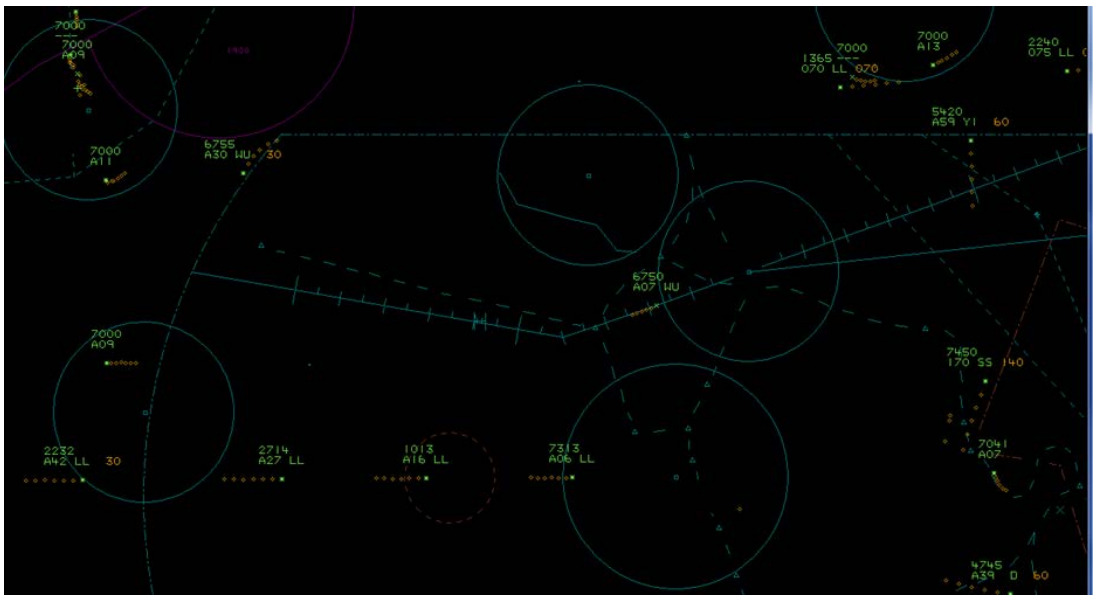


Figure 6: Geometry at 12:43:06 (G650 (6755); A380 (2232); helicopter (7041)).

At 12:43:56 (Figure 7), the Northolt Director, having had the error pointed out by the Coordinator, instructed the G650 pilot to turn left onto heading 030°, immediately followed by the same instruction as an avoiding action turn.

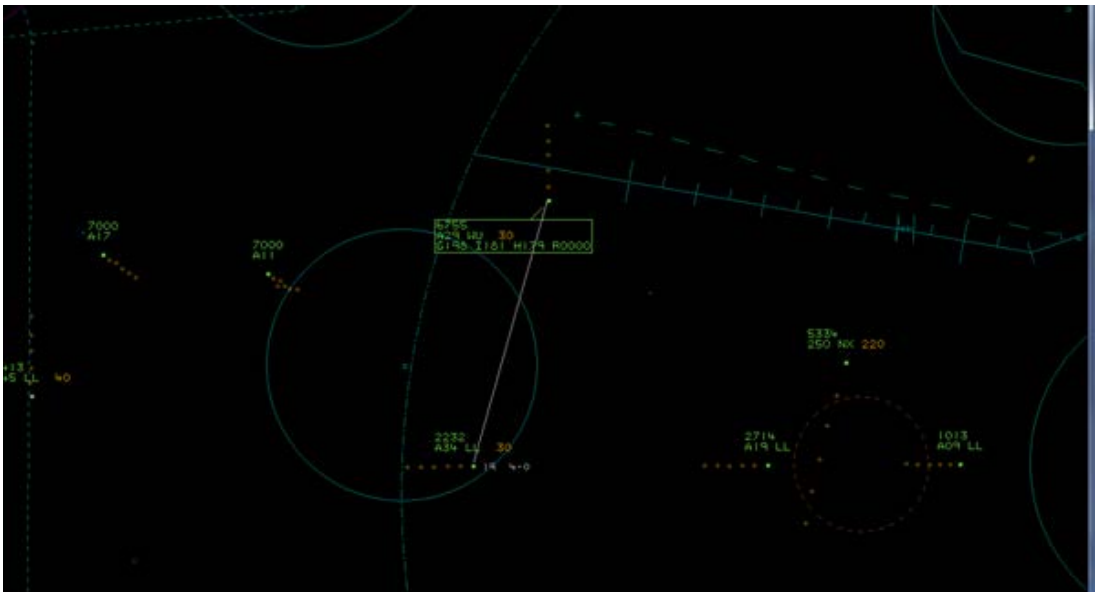


Figure 7: Geometry at 12:43:56 (G650 (6755); A380 (2232)).

At 12:44:10 (Figure 8), the Northolt Director instructed the G650 pilot to turn further left onto heading 360°, with 3nm separation remaining. The rate of turn led to the G650 and the A380 passing with a CPA of 2.8nm horizontally and indicated 100ft vertical separation.

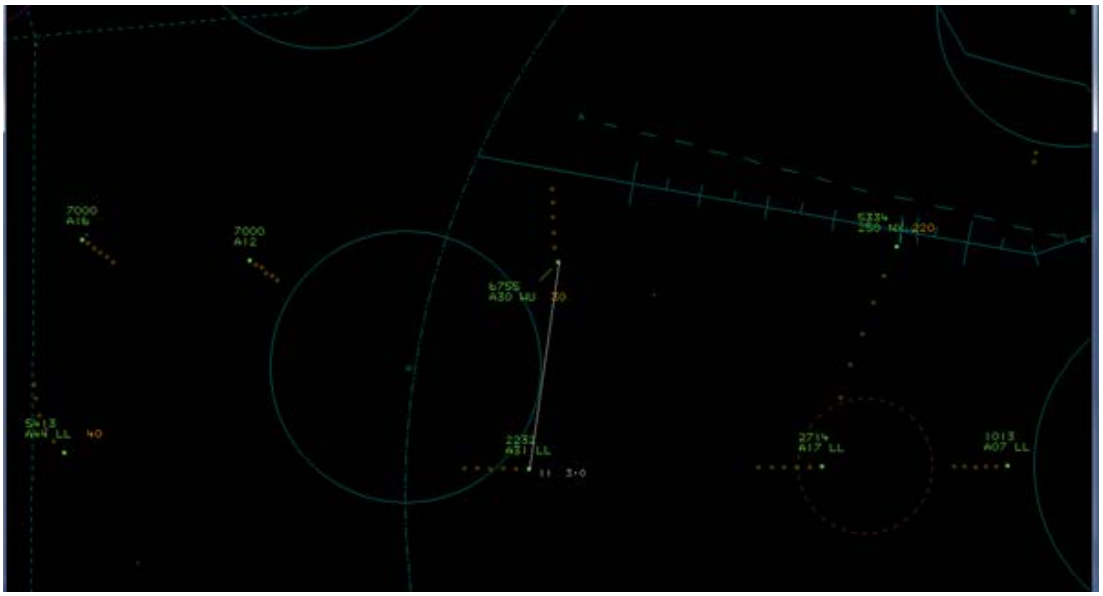


Figure 8: Geometry at 12:44:10 (G650 (6755); A380 (2232)).

Due to the location of RAF Northolt, Northolt Radar controllers operate within the London TMA and CTR, where the airspace is shared by several agencies and there are multiple major airports in the vicinity. The misalignment between Northolt RW07 and Heathrow RW09 means that the approach to Northolt RW07 is conducted according to an extended centreline that has a 'dog-leg' up to the north west. Consequently, aircraft are vectored onto a short base leg southerly track, turned onto a south-easterly track to follow the extended centreline, and then finally turn towards the airfield at approximately 4nm to run. Northolt Radar controllers are trained to assess the wind and aircraft speed[1] and to take extra caution during this stage as the Heathrow inbound traffic lane lies 4nm to the south. The aim is for Northolt Radar controllers to keep their aircraft no further south that the extended centreline.

The Northolt Approach controller is responsible for control of departing aircraft and helicopters transiting through the NRMA. The Northolt Director is responsible for control of IFR recoveries. At a time of low traffic intensity, it is usual for these positions to be band-boxed. Although Northolt Radar is not established for a Supervisor, a controller can be utilised as a Coordinator, assisting the Approach and Director where necessary. In this instance it was the Coordinator who noticed that the G650 had not been turned inbound, pointing it out in time for the Director to issue avoiding action.

After taking over the console, the Northolt Director was subjected to another controller talking as well as 2 landlines ringing. Having answered the Heathrow Radar landline, she was asked which frequency to send a helicopter to entering her airspace. She had not been made aware of this aircraft on console handover. The aircraft was to the south-east of the radar picture, drawing her attention away from the G650 on base leg to the extent that she did not issue the standard south easterly turn inbound.

Due to the workload required when vectoring for Northolt RW07, it may have been pertinent to have delayed the console handover until the G650 was established on a non-threatening heading. This lesson has been disseminated to the Northolt Radar controlling cadre.

This incident has been highlighted to the RAF(U) Swanwick Human factors (HF) team to utilise as a case study in future HF continuation training, in order that other controllers understand the potential hazard that can be introduced by distraction, both being distracted and causing distraction, when conducting safety critical tasks.

[1] Speed control is not allowed.

UKAB Secretariat

The G650 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]; notwithstanding, ATC were required to separate the aircraft.

Summary

An Airprox was reported when a G650 and an A380 flew into proximity at 1244 on Monday 10th October 2016. Both pilots were operating under IFR in VMC and in receipt of a Radar Control Service, the G650 from Northolt Approach and the A380 from Heathrow Approach. The G650 was inbound to Northolt from the north-west for RW07. The pilot had been placed on a southerly base leg but the controller did not turn the aircraft as required towards Northolt, resulting in it tracking towards the A380 inbound to Heathrow. Avoiding action was issued to both pilots.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first noted that the Airprox occurred within Class A airspace of the London TMA.and that both pilots were operating IFR flights under VMC in receipt of a Radar Control Service from controllers situated at Swanwick; the G650 from Northolt Approach, which was bandboxed with the Director position, and the A380 from the Heathrow Final Director. Military Controller members explained that the airspace available to the Northolt controllers is very restricted. Northolt controllers aim to keep their aircraft no further south than the extended centreline of RW07 because the Heathrow approach to RW09L is only 4nm south of this line; they added that this is particularly difficult in strong northerly wind conditions.

In accordance with normal operating procedures for RW07, the G650 pilot had been given a radar heading of 180° for a short base leg with the expectation of a left turn towards the RW07 approach. Members noted that it was at around this time that the Northolt Radar sector was handed over, that the handover had included information about the G650, as well as three other aircraft, but that just after the handover had been completed the off-going controller returned to mention that he had forgotten to handover a pre-note on a helicopter that would be entering the ATZ. Acknowledging that lapses may occur at any time, some members wondered whether the handover had been conducted comprehensively and whether there were any protocols for this. Irrespective, the Board were unanimous in believing that the handover should have been delayed until after the G650 pilot had been turned from his southerly heading towards RW07 at Northolt, and it was therefore considered that the timing and completeness of the Northolt controllers' handover was a contributory factor. The Military Controller member explained that Northolt Approach was under-staffed for the duties and extended shift patterns that the controllers are occasionally expected to perform. Because of this reduced manning, relief breaks are limited to a maximum of 20 minutes, and there is consistent time pressure not to delay handing over positions. Additionally, there are not enough operational controllers on duty to regularly operate the Supervisor position. On this occasion, the provision of a Supervisor, who would have been able to monitor the situation, may have ensured that the timing of the handover would have been regulated to ensure that it took place at an opportune moment, and the tasking and manning of the operational positions could have been improved. In view of this, the Board decided to recommend that HQ Air Command reviews tasking, manning and supervision especially during Northolt extended hours operations.

Immediately after the handover, the on-coming controller accepted a telephone call from Heathrow, who were requesting a frequency for this helicopter. Following this the pilot of the helicopter contacted her and was given clearance along the heli-lanes. Whilst this was occurring the G650 was still tracking south through the point where a left turn should have been issued. The off-going

[2] SERA.3205 Proximity.

controller, who had now taken up Coordinator duties in the vicinity, then warned her that the G650 was still heading south. Notwithstanding the undesirable handover timing, the Board discussed why the on-coming Northolt controller had overlooked the G650 and had allowed it to continue on a southerly heading. It was apparent that she had been distracted following the handover not just by dealing with the helicopter but also by the off-going controller providing supplemental handover information that had been forgotten and by another person within the Ops room who was not on operational duties at the time. Her distraction was considered to be a contributory factor, and the Board all agreed that the Ops room should be regarded as a sterile area that non-operational staff should vacate to remove any possibility of distraction.

The Board then discussed whether the Northolt procedure for RW07 was 'fail safe' because it relied on action by the controller to ensure that aircraft heading south were turned at the appropriate time away from the Heathrow approach. In this respect, the Board were concerned about how the situation would be resolved if there were a communication problem with the aircraft heading south and a turn instruction could not be passed. A Civil Controller member with experience of the Heathrow operation explained that the Heathrow and Northolt Sectors are only 10m or so apart and the Northolt controller could easily shout a warning to the Heathrow Final Director about any problems, and the Heathrow controller would then be able to take appropriate action to resolve the situation; additionally, there is also a priority communications line between the two positions. He added that it is normal operating procedure when sequencing Heathrow traffic for aircraft to be placed on notionally conflicting tracks before tactical intervention occurs to vector them onto final approach. The Board noted that the Heathrow Final Director took timely and appropriate action in issuing an avoiding action turn to the A380 pilot. He had also shouted a warning to the Northolt controller.

The Board then turned its attention to the cause and risk of the Airprox. It was quickly and unanimously agreed that the Airprox had occurred because the Northolt Radar controller had allowed the G650 to fly into conflict with the A380. As to the risk, the Board noted that the Northolt controller had quickly issued avoiding action turns to the G650 pilot when she had been reminded that it was still heading south, and that the Heathrow controller had also issued an avoiding action turn to the A380 pilot. Members noted that these actions had prevented the possibility of a collision, and at CPA standard separation had only marginally been lost (the two aircraft being 100ft vertically and 2.8nm horizontally apart, instead of the required 3nm). Accordingly, the Airprox was assessed as risk Category C, there had been no risk of collision.

The Board was heartened to note that the importance of delaying handovers until aircraft were on a non-threatening heading had been disseminated amongst the Northolt controllers. Additionally, it was pleased to hear that this incident will be used in future HF continuation training.

PART C: ASSESSMENT OF CAUSE, RISK AND SAFETY BARRIERS

Cause: Northolt Radar allowed the C650 pilot to fly into conflict with the A380.

Contributory Factor: 1) Timing and completeness of the Northolt Radar controller's handover.

2) The on-coming Northolt Radar controller was distracted.

Degree of Risk: C.

Recommendation: HQ Air Command review the tasking, manning and supervision especially during Northolt extended hours operations.

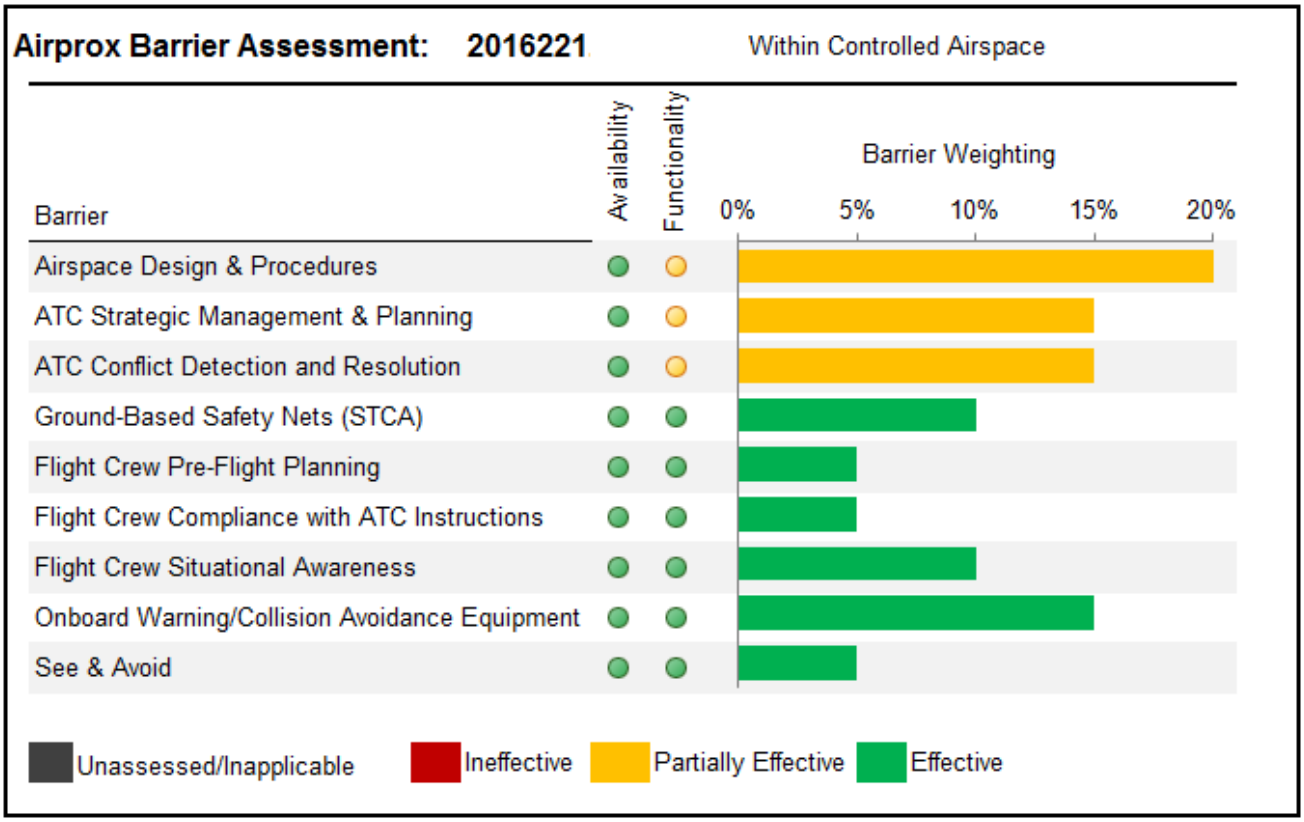
Safety Barrier Assessment[3]:

The Board decided that the following key safety barriers were contributory in this Airprox:

Airspace Design and Procedures was considered to be only **partially effective** because they rely on Northolt controllers making a tactical intervention to ensure that Northolt inbounds on base leg to RW07 are turned away from the RW09L approach to Heathrow.

ATC Strategic Management and Planning was considered to be only **partially effective** because the Northolt Radar sector was not appropriately manned for extended hours operations.

ATS Conflict Detection and Resolution was only **partially effective** because the Northolt Radar controller had overlooked the position of the G650 relative to the A380 on approach to Heathrow due to distraction, and the Coordinator had had to remind her.



[3] Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace). The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, or Unassessable/Inapplicable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident. The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.