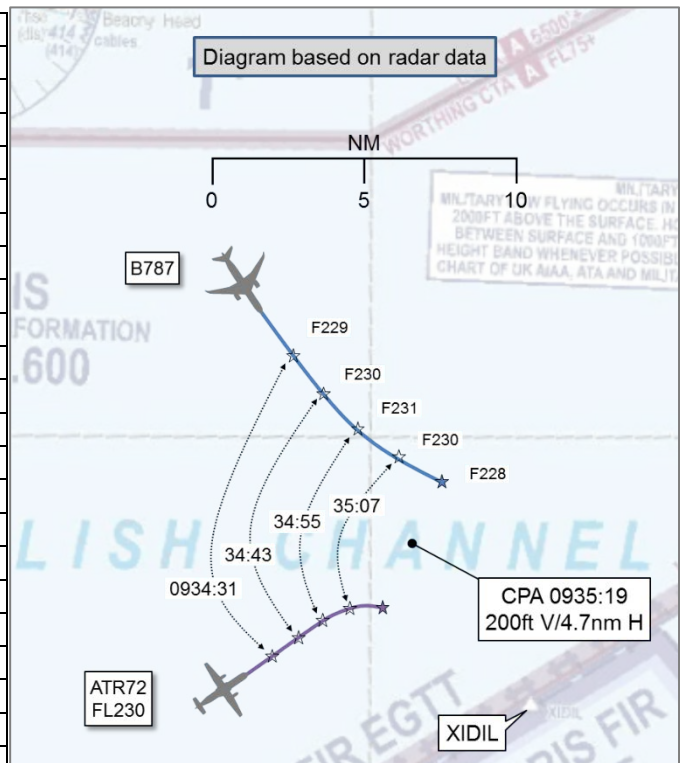


**AIRPROX REPORT No 2017247**

Date: 12 Oct 2017 Time: 0935Z Position: 5026N 00032E Location: ivo XIDIL

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	B787	ATR72
Operator	CAT	CAT
Airspace	Airway M605	Airway M605
Class	A	A
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	London AC	London AC
Altitude/FL	227	230
Transponder	A,C,S	A,C,S
Reported		
Colours	Company	Company
Lighting	NK	Strobes, nav
Conditions	VMC	VMC
Visibility	NK	>10km
Altitude/FL	FL230	FL230
Heading	NK	030°
Speed	300kt	285kt
ACAS/TAS	TCAS II	TCAS II
Alert	None	None
Separation		
Reported	<1000ft V/NK H	500ft V/5nm H
Recorded	300ft V 4.5nm H	



**THE BOEING 787 PILOT** reports that when approaching FL220 during climb, which was the flight level they were initially cleared to by London Control, they were re-cleared to climb to FL250, their planned cruise level. Between FL220 and FL230 they were asked by another air traffic controller, on the same frequency, to descend back to FL220. Then the controller asked them to turn left immediately for avoiding action, and further left a few seconds afterwards. They saw traffic on their right, which they had not noticed on TCAS before. Because they were busy complying with the air traffic controller’s instruction, they had no time to see the lateral separation or the exact vertical separation, but it was less than 1000 ft. After a minute or so they were cleared to return to their flight plan route, and to maintain FL220.

He assessed the risk of collision as ‘None’.

**THE ATR72 PILOT** reports that they were in cruise at FL230, routing towards the LYD VOR, on a positioning flight. They were given an avoiding action turn of right heading 180°. As they started the turn the pilot picked up the conflicting aircraft appearing on their TCAS from left to right and climbing towards their level. He also gained visual contact with aircraft at this point. There was still some distance between the two aircraft and the TCAS did not provide a TA or RA. Once they had completed the turn on to 180°, they were initially instructed to route towards XIDIL. However, this was not on their Flight Plan route so they were cleared towards LYD VOR.

He assessed the risk of collision as ‘Low’.

**THE AC WORTHING PLANNER (P) CONTROLLER** reports she had just taken a handover of the position; the Sector’s Tactical (T) controller had also just taken a busy complex handover from a trainee. Various tasks needed completing and the T controller was keen to get in the seat and get aircraft moving. A pilot, north of SITET, was requesting higher with traffic 1000ft above, this distracted the T controller. At handover, the ATR72 was maintaining FL230 heading easterly towards WAFFU and the

B787 was maintaining FL220 (requesting FL250) heading southerly towards XIDIL. The T controller climbed the B787 pilot to FL250 and then on immediately noticing the conflict, in the next transmission instructed the pilot to maintain FL220. The aircraft by this point was showing FL221 and the B787 pilot did not read back the instruction immediately. The T controller repeated the instruction to descend and maintain FL220 and also turned the aircraft left heading 125° (possibly in the same transmission), the Mode C on the B787 went up to FL230. At this point, avoiding action was given to both aircraft numerous times and she believed separation showed around 4nm on the Separation Monitor.

**THE AC WORTHING SECTOR OFF-GOING T CONTROLLER** reports he was acting as OJTI on Sectors S18/19/20/21/22 in the Tactical position. The trainee had been training since March. The traffic was under control but the trainee had fallen behind. It was a good learning situation and he was happy to let the trainee continue. When the point came to handover, he was closely monitoring the traffic situation, and could hear the handover commence. He was aware that the oncoming controller had been monitoring the frequency and watching the radar for a number of minutes. Traffic kept on interrupting the handover process, and he then heard the on-coming controller state that he had the traffic. His trainee asked the on-coming controller for confirmation that he had control, and the on-coming controller reaffirmed he was in control.

**THE AC WORTHING SECTOR ON-COMING T CONTROLLER** reports that, having just taken over, he made the decision to climb the B787 pilot to FL250 from FL220 and to resume his own navigation to XIDIL. As he did so he became aware that this was not necessarily going to achieve separation against the ATR72, which was maintaining FL230 on a crossing track. He turned the B787 pilot left heading 125° to try to improve the situation and, in the next transmission, he stopped off and then descended the B787 pilot back down to FL220. Upon further assessment as the B787 pilot appeared not to be stopping or descending, he took the decision to provide avoiding action to both pilots, doing so twice to each. He felt that he did not take a fully comprehensive handover and was not fully aware of the relative positions and levels of all aircraft in his sector but felt an urgency to take over the sector from the incumbent Trainee and Mentor. He was initially focused on getting another pilot a climb clearance because he had been held down under crossing traffic and his first received transmission was from its pilot requesting climb.

## Factual Background

The minimum separation required between the two aircraft was 5nm horizontal or 1000ft vertical.

## Analysis and Investigation

### CAA ATSI

ATSI had access to reports from both pilots and two of the three controllers involved<sup>1</sup>. The area radar and R/T recordings for the period were reviewed. ATSI also received a copy of the unit investigation report. Screenshots in the report are taken from the area radar. All times UTC. The B787 was an IFR flight from London Heathrow, receiving a Radar Control Service from the Worthing Sector controller at the London Area Control Centre. The ATR72 was an IFR flight from Jersey, also receiving a Radar Control Service from the Worthing Sector controller.

At 0918:25, the ATR72 pilot contacted London Control in the climb to FL220 on their own navigation in accordance with their flight planned routing. The controller cleared the aircraft to climb to FL230 at 0921:40 and, at 0926:40, instructed the pilot to fly a heading of 040°.

At 0927:40, the B787 pilot contacted London Control in the climb to FL170, also on their own navigation in accordance with their flight planned routing. The controller cleared the aircraft to climb to FL180 and, at 0930:20, instructed the pilot to fly a heading of 140°.

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<sup>1</sup> No report was received from the trainee controller.

At 0931:20, the controller instructed the B787 pilot to turn left onto heading 135° and cleared him to climb to FL200.

At 0932:00, the controller cleared the B787 pilot to climb to FL220 (Figure 1).

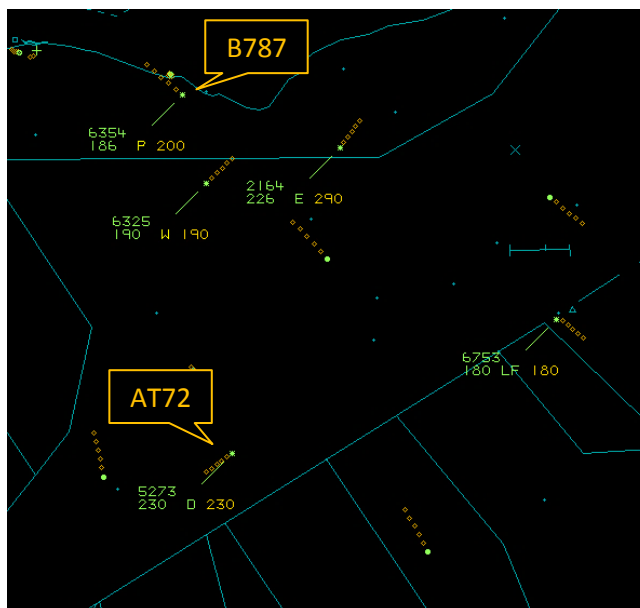


Figure 1 – 0932:00.

At 0933:00, there was a change of controller.

At 0933:40, the new controller cleared the B787 pilot to resume their own navigation to a reporting point on the London/Paris FIR boundary, and to climb to FL250 (Figure 2).

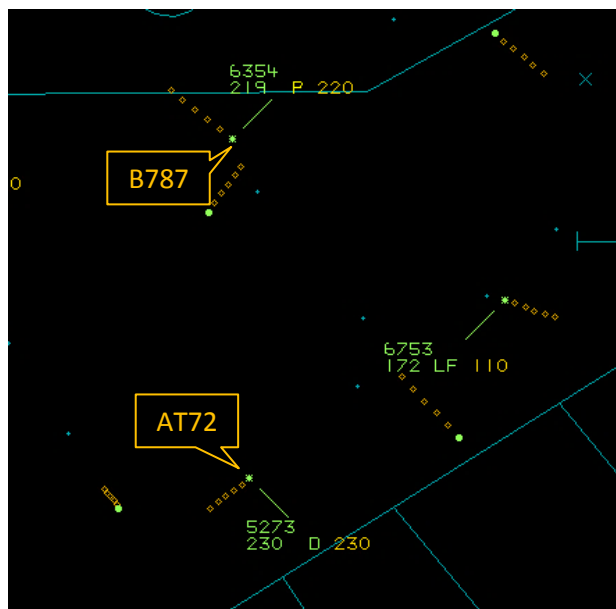


Figure 2 – 0933:40 (ATR72 17nm S of B787).

Almost immediately following this, at 0933:51, the controller instructed the B787 pilot to fly a heading of 125°, and repeated the instruction to climb to FL250. This was not read back by the pilot, likely because the controller had stepped on the end of the B787 pilot's previous read back, and so the beginning of the controller's transmission (the B787's callsign) was blocked.

The controller then, at 0934:00, (Figure 3), transmitted: *"In fact [C/S] maintain two two zero my apologies descend to maintain flight level two two zero"*.

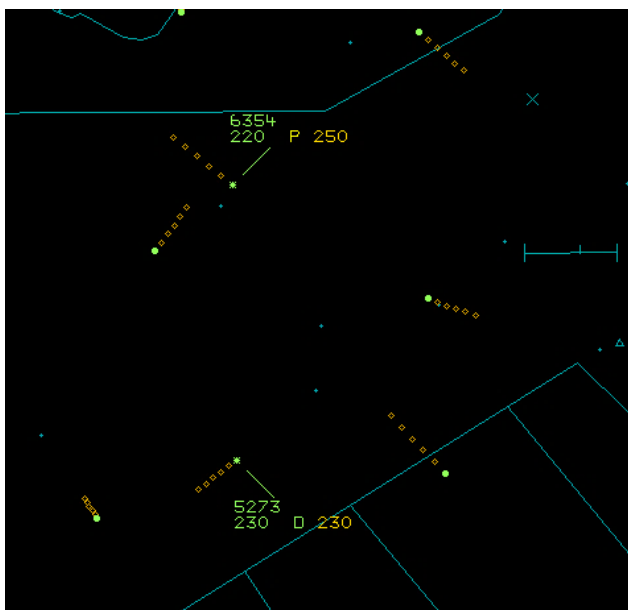


Figure 3 – 0934:00 (15nm apart).

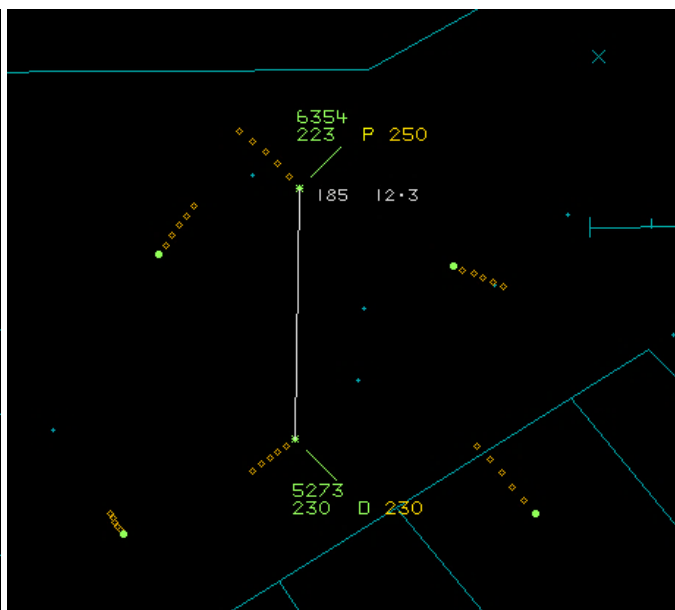


Figure 4 – 0934:30.

The pilot of the B787 did not reply, and so the controller repeated the instruction to descend to FL220 which was then read back by the pilot.

At 0934:18, the controller instructed the B787 pilot to turn left heading 125°, and then, at 0934:30, (Figure 4), went on to issue an avoiding action instruction: *"[C/S] avoiding action turn left heading one zero five"*

The pilot of the B787 read back the instruction, and at 0934:42, (Figure 5), the controller issued an avoiding action instruction to the ATR72 pilot: *"[wrong C/S prefix – stops] [C/S suffix] avoiding action, turn right heading one six zero degrees"*.

Despite the controller having used the wrong callsign prefix, and then repeating with the suffix only, the pilot of the ATR72 picked up the instruction and read it back correctly.

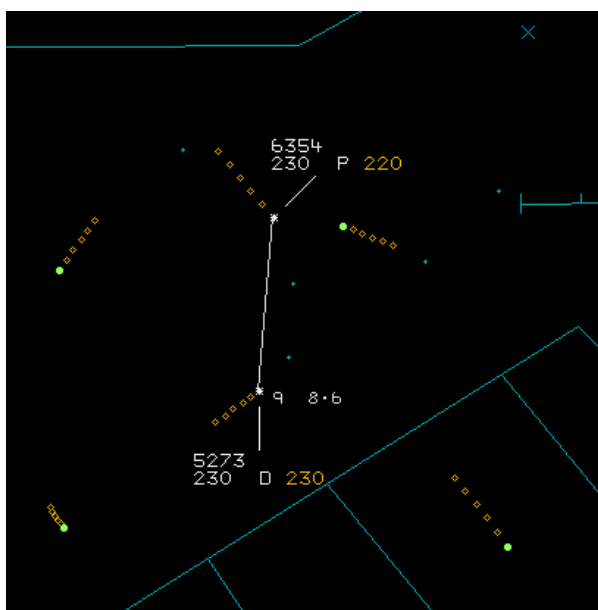


Figure 5 – 0934:42.

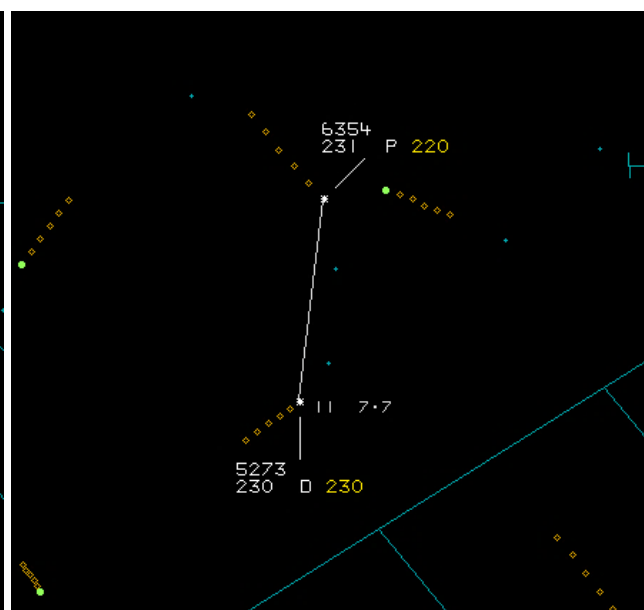


Figure 6 – 0934:48.

At 0934:48 the controller again repeated the instruction to the B787 pilot to descend to FL220 which was read back by the pilot (Figure 6).

At 0934:55, (Figure 7), the controller issued a further avoiding action turn to the B787 pilot, which was read back by the pilot: “???? [part C/S], avoiding action turn left now heading zero eight zero degrees”.

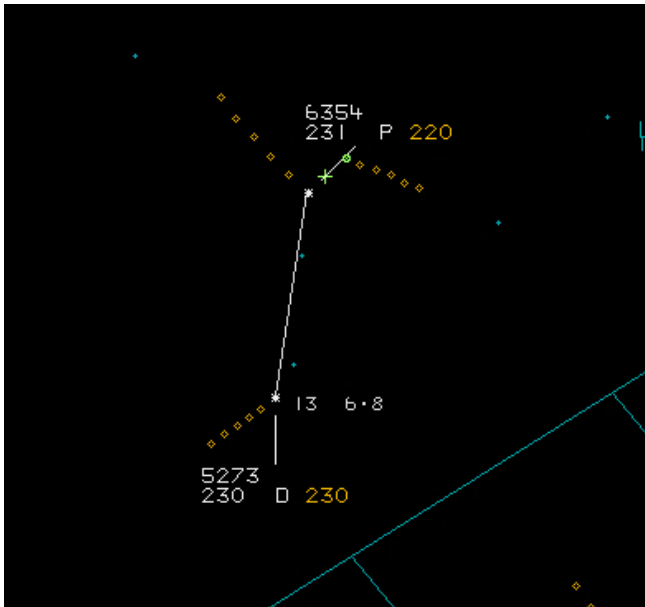


Figure 7 – 0934:55.

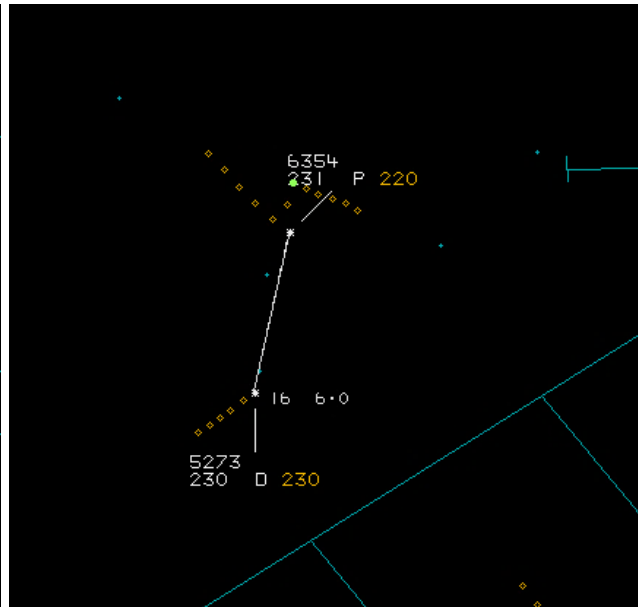


Figure 8 - 0935:00.

At 0935:00 the controller instructed the ATR72 pilot to turn right heading 180° (not issued as an avoiding action turn), (Figure 8).

The turn instruction was read back correctly by the pilot of the ATR72 who, at 0935:10 reported: “we got him sight”.

CPA was at 0935:23, with the aircraft separated 4.5nm laterally and 300ft vertically (Figure 9).

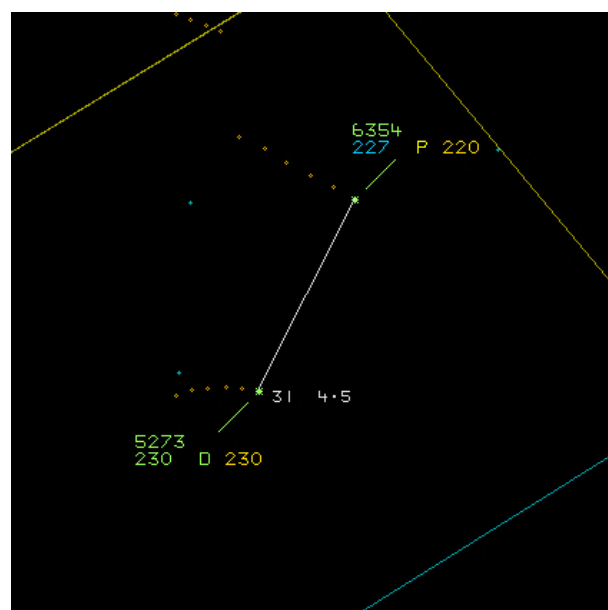


Figure 9 – 0935:23.

The sector was reported as being operated in a bandbox configuration of 5 sectors combined. A controller had been undergoing training (U/T) in the Tactical position, supervised by an OJTI. The sector was supported by a third controller in the Planner position.

A number of aircraft, including the B787, required intervention by the U/T controller to facilitate climb against both crossing and opposite direction aircraft. The OJTI had commented that in his opinion, traffic levels were low to moderate, but that the U/T controller had started to fall behind, which increased the complexity of the situation. However, the OJTI was comfortable with allowing the U/T controller to continue, as it was “a good learning situation”.

Two controllers had, in the meantime, arrived to take over both Tactical and Planner positions. The handover of the Tactical position was conducted by the U/T controller, but it was constantly interrupted by aircraft calls, and the incoming controller reported the whole process as “dis-jointed”. The OJTI reported that, at the time, they had not realised that the handover was actually taking place, and that he had intended to take-over the R/T from the U/T controller, resolve the remaining “conflictions”, with a view to then having the U/T controller hand over a less complex scenario to the incoming controller. However, they believed that the incoming controller had assimilated the “picture”, and so they were comfortable to release the position to him when the incoming controller confirmed that he was ready to take over.

Controllers at this unit are trained to follow the mnemonic WEST when handing/taking over a position. (Weather, Equipment, Situation, Traffic). The incoming controller, who was very experienced, stated that the handover from the U/T controller had not followed this guidance, but believed that the U/T controller was keen for him to take over and that the U/T had fallen behind. When interviewed as part of the unit investigation, the incoming controller reported not being aware of the ATR72; it could not be determined if that was because it did not form part of the handover, or that the incoming controller had just not assimilated its presence.

After having taken over the position, the incoming controller immediately focussed on what he felt was the priority, which was a further climb for the B787 which had, in his opinion, unnecessarily been prevented from climbing earlier. In issuing the climb and heading instructions to the B787 pilot he had not taken into account the ATR72, the presence of which he had not assimilated. Prior to instructing the B787 pilot to climb, the controller did not check (“probe”), the validity of the instruction using the electronic iFACTS<sup>2</sup> system available to them. When he entered the climb instruction to FL230 into iFACTS, (immediately after issuing the instruction to the pilot), the conflict was highlighted and the controller was made aware of the presence of the ATR72. The controller then took immediate actions to resolve the confliction, initially issuing a heading of 125° to the B787.

The controller commented that it was not uncommon for controllers not to “probe” iFACTS prior to issuing instructions to aircraft when working this sector. LACC MATS Part 2 states:

*‘The iFACTS tools are to be used, in conjunction with the radar display, for the detection of conflictions and assessment prior to issuing clearances. All data, including Tactical Data, must be input into the tools.*

*‘When entering Tactical Data electronically, the principal of “Enter As You Speak, Read as You Listen” should be applied to clearances issued by voice, in order to ensure the accuracy of data entry and pilot read back.’*

CAA ATSI understands that in the opinion of some controllers on this sector, the speed at which they are required to work to provide continuous climb for aircraft, ensuring they meet the specified levels for entering the next sector, and the subsequent manual intervention required to ensure separation against other aircraft, can be restricted by having to first enter the data into iFACTS.

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<sup>2</sup> interim Future Area Control Tools Support.

The controller stated that he had not fully assimilated that the first aircraft was not only a B787, but that it was likely to be light due to the short duration of its flight. The initial course of action was a heading change to increase lateral separation. This was swiftly followed by a descent instruction back to the B787 pilot's previous cleared level of FL220, which was based on observing the aircraft's actual level at the time. He stated that, had he realised the potential performance capability of the aircraft, he would have continued its climb above the ATR72.

The first heading change issued by the controller to the B787 pilot after having identified the confliction was issued as a standard rate left turn of 15° from the original heading. The subsequent avoiding action turn was then a further left turn of 20°. The final heading change was issued as standard rate left-turn of 25°. The avoiding action turn issued to the B787 pilot did not include the instruction to make the turn "immediately", and at no time was Traffic Information on the ATR72 passed to the B787 pilot. The controller's R/T was both rushed and at times garbled, with the callsign of the B787 being clipped or abbreviated, requiring the controller to repeat the instructions on more than one occasion. In his report, the pilot of the B787 reported not having noticed the ATR72 on TCAS, until after having responded to the second heading change issued by the controller. Being occupied with actioning the controller's instructions, they did not monitor separation, but reported receiving neither a TCAS TA nor an RA.

The avoiding action turn issued to the ATR72 pilot was a right turn of 120° from the original heading. This was then followed by a further right turn of 20°, not issued as an avoiding action turn. Again, at no time did the controller include the instruction to make the turn "immediately", and at no time was Traffic Information on the B787 passed to the ATR72 pilot. Further, the controller started using the wrong callsign, or clipped the callsign of the ATR72 when issuing the avoiding action. However, the ATR72 pilot took the instructions as being theirs and acted upon them. The pilot of the ATR72 also reported not being aware of the B787 on TCAS until after having received their second heading instruction from the controller. They then acquired the B787 visually. They too reported receiving neither a TCAS TA nor an RA.

The OJTI was a very experienced controller who had qualified as an OJTI earlier in the year. The U/T controller was on their first assignment, however they had worked together in this capacity for over 7 months. The U/T controller was at Phase 8 of a ten-phase training plan and had previously worked as a valid controller elsewhere in the Centre.

Although both Tactical and Planner position handovers commenced almost simultaneously, it was reported that the Planner handover was completed approximately 5 minutes before that of the Tactical position.

The LACC MATS Part 2 advises controllers to:

*'...avoid a new Planner and Tactical taking-over at the same time on the same suite.'*

Any degree of support that might have been provided by the Planner to the Tactical controller, could be considered to have been reduced. Had the original Planner remained in position for a short period after the incoming Tactical controller had taken over the position, then the operational effectiveness of the position may have been better maintained.

CAP493 Manual of Air Traffic Services (MATS) Part 1 states:

*'On the occasions when controllers hand-over a busy and complex situation, they should remain available adjacent to the position for a short period following the hand-over. This will enable the accepting controller to seek immediate clarification of any points that may arise during this time.'*<sup>3</sup>

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<sup>3</sup> Section 8: Chapter 1: Control Room Administration - Page 2.

This guidance is repeated in the LACC MATS Part 2. The OJTI who was responsible for the handover reported that he would normally comply with this, but wanted to find somewhere to debrief his U/T controller, and so did not remain available.

The following is a summary of the factors that were considered relevant:

When relying on lateral separation only, 5nm is required to be applied by the controller, however, this was eroded at 0935:15, as both aircraft were seen to commence their turns.

Following a rushed and incomplete handover/takeover of the position, the incoming Worthing controller issued a climb instruction to the B787 pilot which placed it into conflict with the ATR72, the presence of which they had not been aware of.

The handover by the U/T controller was not in accordance with the guidance in CAP493 and not overseen effectively by the OJTI, who was therefore unable to cross-check that all relevant information had been passed by the U/T controller.

The incoming controller did not use iFACTS to check for conflicts prior to issuing the climb instruction to the B787 pilot, contrary to LACC MATS Part 2.

Although the confliction was detected immediately upon entering the details into iFACTS, the subsequent deconfliction instructions were delivered in a rushed and non-standard manner, and were insufficient to prevent a loss of standard separation from occurring.

No reciprocal Traffic Information was passed to the pilots, reducing their situational awareness and the potential for them sighting the conflicting aircraft.

Simultaneous handovers of both Tactical and Planner positions reduced the effectiveness of any mutual support which could have been provided.

### **UKAB Secretariat**

Notwithstanding that, in Class A airspace, ATC were required to separate the aircraft, the B787 and ATR72 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>. Because the incident geometry is considered as converging then the B787 pilot was required to give way to the ATR72<sup>5</sup>. ATC issued avoiding instructions to both pilots.

### **Summary**

An Airprox was reported when a B787 and an ATR72 flew into proximity at 0935hrs on Thursday 12<sup>th</sup> October 2017. Both pilots were operating under IFR in VMC and in receipt of a Radar Control Service from the London AC Worthing Sector.

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

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

The Board first noted that both pilots were under the control of the same AC Sector controller, and that the Airprox had occurred just after a handover of the sector from a trainee. At the time the sector was being operated in a banded configuration of 4 sectors combined, and some members wondered whether this arrangement was appropriate for a controller under training. A civil controller member with experience of the AC operation commented that this was not an unusual occurrence for the sector and,

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

<sup>5</sup> SERA.3210 Right-of-way (c)(2) Converging.



although the trainee had reportedly been struggling to keep up with the traffic situation, all the clearances issued by them prior to handover had been safe with no potential for a loss of separation (although some aircraft had been kept lower than ideal), and the OJTI had reported that, in his opinion, the traffic levels were low to moderate.

Members felt that the nub of the issue was whether the oncoming controller had received an appropriate handover, and whether he had assimilated the information about the ATR72. They noted that, although the London Area Control Centre (LACC) Manual of Air Traffic Services (MATS) Part 2 states handing over the Planner and Tactical positions at the same time should be avoided, the two controllers had arrived at the same time and they wondered whether this may have subsequently reduced the effectiveness of the on-coming Planner in assisting the on-coming Tactical controller. Furthermore, members noted that the OJTI had reported that he had not initially realised that the handover was actually taking place and was, therefore, not able to cross-check that all the relevant information had been passed to the on-coming controller. Nevertheless, because the on-coming controller agreed to take over the position the OJTI assumed that he was fully aware of the traffic situation. However, contrary to LACC procedures, the OJTI did not remain adjacent to the sector for a short period following the handover to assist the on-coming controller if required. As a result, the Board noted that the on-coming controller was not only operating with a new Planner, but also without any possible assistance from the off-going OJTI after the handover.

The on-coming Tactical controller reported that he concluded during the handover that there were a number of issues that would need to be sorted out straight away after he took over the position. Consequently, he was keen to take over as soon as possible and, in a frank and honest report, agreed with hindsight, that he had not taken a fully comprehensive handover and had not been fully aware of the relative positions and levels of all the aircraft in the sector. The Board decided that this was a contributory factor to the Airprox in that the oncoming Tactical controller took control of the sector without fully assimilating the traffic situation. The on-coming controller's first call was from a pilot, who had been held down below crossing traffic, requesting to climb. He initially focussed on resolving this situation and then cleared the B787 pilot to climb from FL220 to FL250, through the level of the ATR72 at FL230 on a conflicting track which he had not assimilated and could not recall if he had been informed about during the handover.

The Board noted that prior to issuing a climb clearance to the B787 pilot he should, in accordance with LACC procedures, have probed the validity of the instruction using the electronic interim Future Area Control Tools Support (iFACTS). When iFACTS was probed after the controller had issued the amended climb clearance to the B787 pilot, the conflict with the ATR72 was highlighted and the controller's first reaction was to issue a turn to the B787 pilot, which was followed by instructing him to descend back to FL220. This instruction was repeated because the pilot did not respond. The controller reported that if he had been aware of the short nature of the B787's flight, and therefore its potential high climb-rate, he would have continued its climb and would, he thought, have been able to maintain separation from the ATR72. The ATC member agreed with this assessment and he also opined that the safest course of action would probably have been to do nothing and let the B787 continue to climb to FL250, quickly through the ATR72's level. Nevertheless, having instructed the B787 pilot to return to FL220, an avoiding action turn was then issued to both the B787 and ATR72's pilots. Because these headings were not resolving the confliction, further turns were then given but no Traffic Information was passed to either pilot.

The Board then turned its attention to the cause and the risk of the Airprox. The Board quickly and unanimously agreed that the Airprox had occurred because the on-coming Tactical controller had cleared the B787 into conflict with the ATR72, with a contributory factor being that he had not fully assimilated the traffic situation during the handover of the sector. As to the risk, although standard separation had been technically lost, members noted that the separation at CPA was 300ft vertical and 4.5nm horizontal (where 5nm was required). Neither pilot had received a TCAS TA/RA, and the ATR72 pilot had become visual with the B787 during the incident. Therefore, although it was acknowledged that the need for avoiding action and subsequent loss of separation could not be considered as normal operating procedures, there had been no risk of collision and the incident was accordingly assessed as risk Category C.

Finally, the NATS advisor advised the Board that the ATC Unit involved had addressed a number of competency and human factor issues that had arisen during this Airprox, and the Board were heartened to hear that associated lessons had been learnt and implemented.

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

Cause: The on-coming Tactical controller cleared the B787 into conflict with the ATR72

Contributory Factor: The on-coming Tactical controller took control of the sector without fully assimilating the traffic situation.

Degree of Risk: C.

**Safety Barrier Assessment<sup>6</sup>**

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

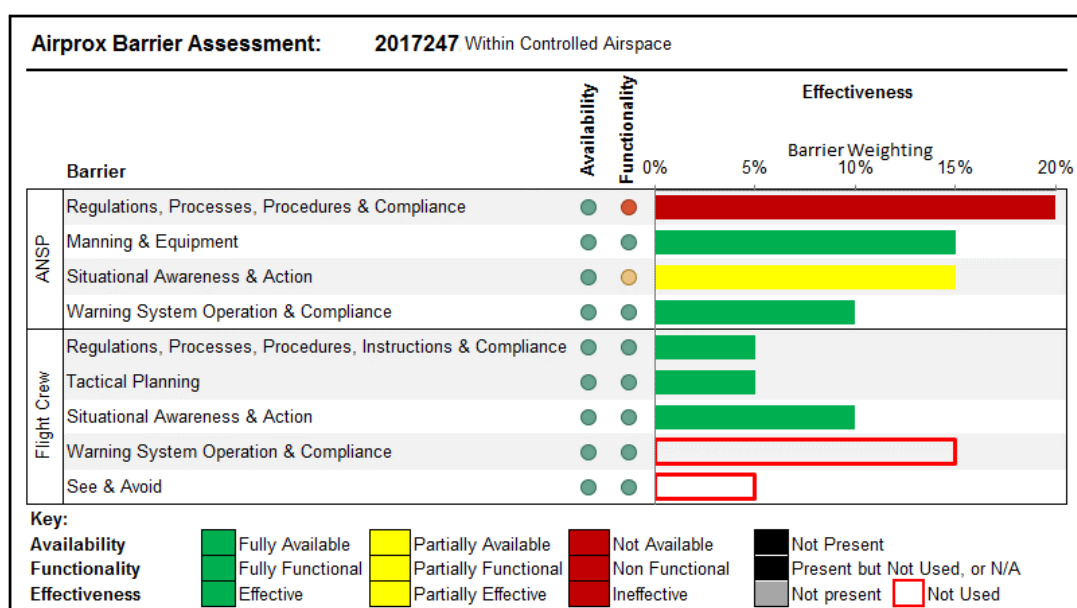
**ANSP:**

**Regulations, Processes, Procedures and Compliance** were assessed as **ineffective** because the ATC team did not comply with the LACC procedures. The handover of the Worthing Tactical Sector was incomplete and occurred at the same time as the Planner position was handed over; the Worthing Tactical controller did not utilise IFACTS before instructing the B787 pilot to climb; and the OJTI did not remain near the Sector after handover to assist the oncoming controller.

**Situational Awareness and Action** were assessed as **partially effective** because the Worthing Sector Tactical controller instructed the B787 pilot to climb into conflict with the ATR72. However, he quickly realised the confliction and took action to control the situation.

**Flight Crew:**

**The Warning System Operation and Compliance and See and Avoid** were **not used** because the two aircraft did not proceed into close proximity.



<sup>6</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).