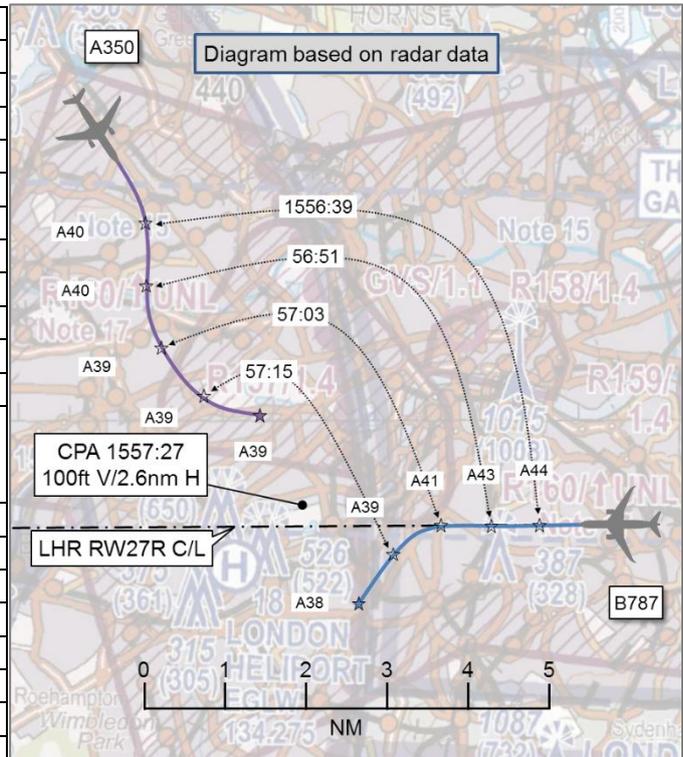


**AIRPROX REPORT No 2018286**

Date: 23 Oct 2018 Time: 1557Z Position: 5129N 00009W Location: 12nm E Heathrow

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	B787	A350
Operator	CAT	CAT
Airspace	London TMA	London TMA
Class	A	A
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	Heathrow FIN	Heathrow FIN
Altitude/FL	3800ft	3900ft
Transponder	A,C,S	A,C,S
Reported		
Colours	Company	Company
Lighting	Nav, wingtip strobes, beacon, landing	Standard external
Conditions	VMC	VMC
Visibility	>10km	NK
Altitude/FL	4000ft	4000ft
Altimeter	QNH (1029hPa)	QNH (1029hPa)
Heading	275°	195°
Speed	180kt	NK
ACAS/TAS	TCAS II	TCAS II
Alert	None	None
Separation		
Reported	0ft V/~1nm H	Not seen
Recorded	100ft V/2.6nm H	



**THE BOEING 787 PILOT** reports that they were established on the ILS RW27R at Heathrow. It became apparent that an Airbus A350 was on a southerly heading towards the Localiser and into conflict with them. The A350 pilot was not responding to instructions so avoiding action was given to the B787 by the controller consisting of an immediate turn to the south. The A350 turned eastwards shortly afterwards and passed to the right of them in the opposite direction.

He assessed the risk of collision as 'High'.

**THE AIRBUS A350 PILOT** reports that operations were normal until established on ILS DME RW27R after radar vectoring and speed control. They were instructed by Heathrow Tower to reduce speed to 160kt due to a 'narrow body' approximately 3.5nm ahead. Traffic was asked to vacate at first available left exit during landing roll. As they descended below 280ft, a go-around was instructed by the Aerodrome controller because the traffic ahead was still on runway at this point. The go-around was executed, the aircraft cleaned up, and they were subsequently radar-vectorred for another approach. They were being vectorred with speed control by the Heathrow DIR, late right-downwind for ILS DME RW27R. Speed control was given as 180kt and heading instruction and track miles to go information were issued. However, during the subsequent turn onto a heading of 195°, they were informed by LHR DIR that the heading instruction was not 195° but 095°, and that they were to immediately turn left back onto 095°. An emergency avoidance heading 095° instruction was then issued and repeated, followed by a further left turn heading 360°. Subsequently they were sequenced and radar vectorred for approach and landing for ILS DME 27R. He did not see the B787.

**THE TC HEATHROW FINAL DIRECTOR (FIN DIR)** reports that the A350 had gone-around and was being re-sequenced. The pilot checked in with her and, because there was another aircraft immediately

on top of him, she turned the A350 pilot right onto 095° and reduced his speed to 180kt. The B787 was just establishing onto RWY27R at about 14nm when she noticed that the A350's heading did not look right. She informed the pilot that the heading should have been heading 095° and to turn left onto 080°. She did not think that she received a readback and then the pilot said they were turning onto 095°. She replied negative, turn left immediately onto 360°, but again she did not think that she received a readback. Her only option then was to break the B787 off its approach as the A350 was heading straight towards it. She gave the B787 pilot avoiding action and turned him left onto south. She returned to the A350 pilot and gave him avoiding action onto north. She then gave Traffic Information to the B787 pilot and he reported that he had the traffic in sight.

## Factual Background

The weather at Heathrow was recorded as follows:

METAR COR EGLL 231550Z AUTO 30010KT 9999 NCD 15/08 Q1029 NOSIG=

## Analysis and Investigation

### CAA ATSI

At 1555:42, the B787 was on a closing heading for the ILS RWY27R. The A350 was downwind right-hand for RWY27R, having carried out a go-around from a previous approach, and was instructed to *“reduce speed one eight zero knots and turn right heading zero nine five”*. The pilot readback *“one eight zero knots, right heading zero nine five”*

**Note:** In the A350 pilot's report they state that they were issued with a heading of 195°.

At 1556:20 (Figure 1), the A350 could be seen turning south. The controller advised the A350 pilot that the heading was 095° and instructed them to turn left immediately heading 080°. The pilot readback *“heading 095 degrees”*. The controller responded by reiterating the instruction to turn left immediately heading 080°. Having received no readback the controller then repeated the instruction again, to turn left immediately heading 080°.

**Note:** The pilot can be heard faintly in the background transmitting at the same time as the controller, however, the content of their transmissions could not be determined, and the pilot report does not mention heading 080° at any point.

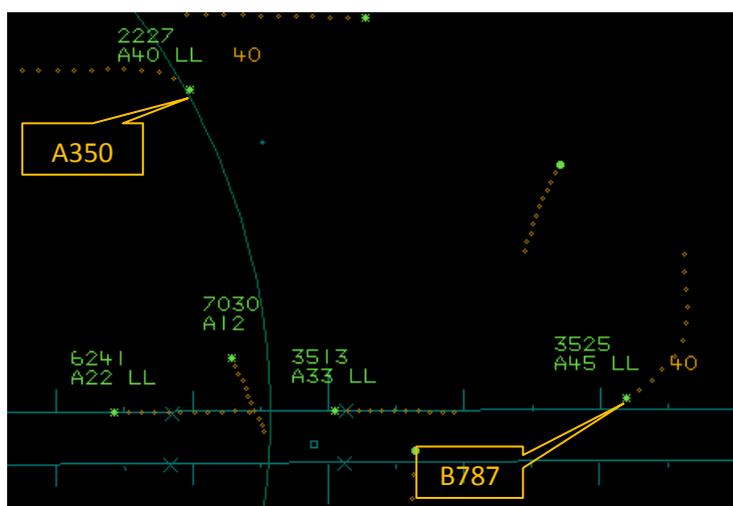


Figure 1 – 1556:20.

At 1556:42 (Figure 2), the controller instructed the B787 pilot *“avoiding action turn left immediately heading 180 degrees”*. The pilot readback *“left immediately”*. The controller reiterated that the heading was south. The pilot responded with *“heading south”*.

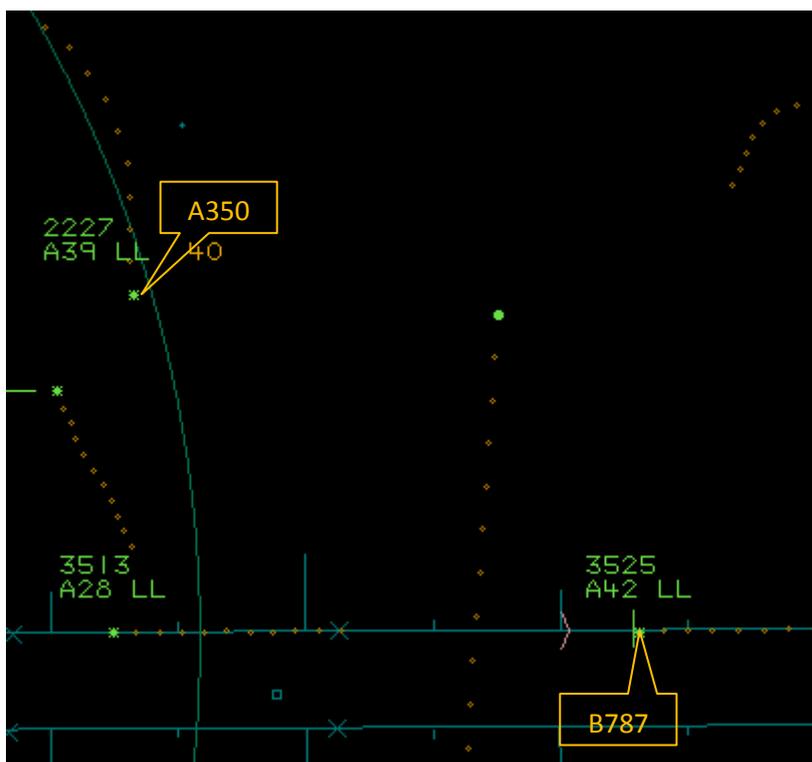


Figure 2 – 1556:42.

At 1557:02, the controller instructed the A350 pilot “avoiding action, avoiding turn left heading 360 degrees”. The pilot responded with “360 degrees”.

At 1557:20 (Figure 3), the controller advised the B787 pilot “traffic just going behind you now 4000 feet”. The pilot reported visual with the traffic.

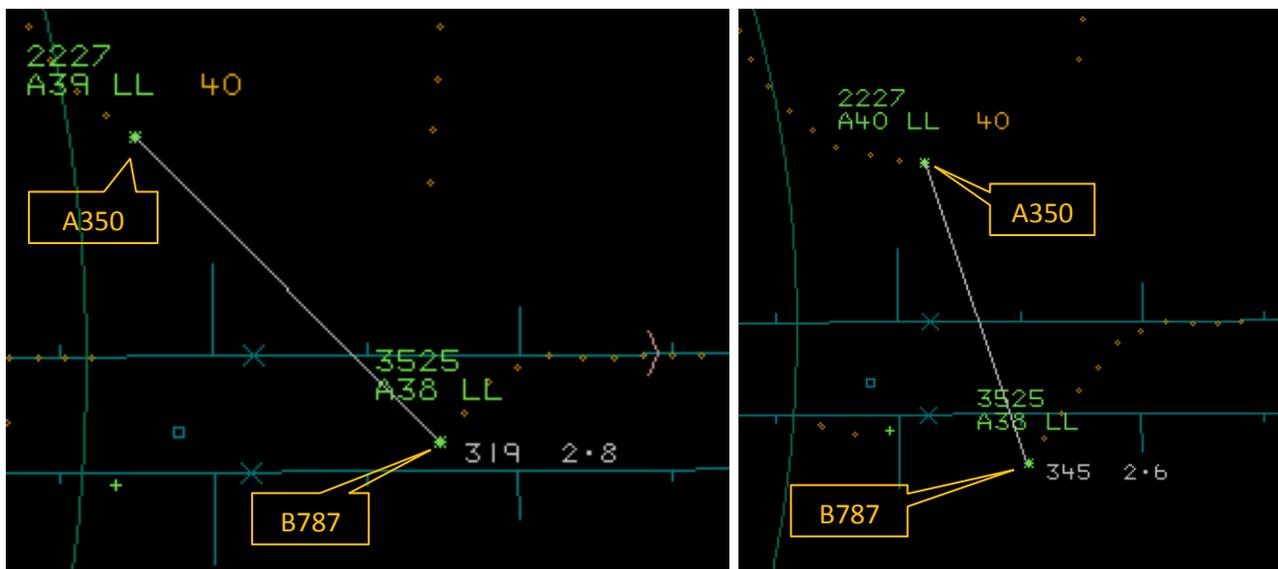


Figure 3 – 1557:20. Figure 4 - 1557:40.

CPA occurred at 1557:40 (Figure 4), with the aircraft separated by 2.6nm laterally and 200ft vertically. [Another radar recording, timed at 1557:25, shows the two aircraft separated vertically by 100ft, at the same horizontal distance.]

The Airprox took place within Class A airspace, with both aircraft operating IFR under a Radar Control Service from the Heathrow Director.

CAP 493, Manual of Air Traffic Services Part 1, states<sup>1,2</sup>

*3C.1 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, e.g. ATC errors or differences in the pilot's estimated and actual times over reporting points, 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.*

The controller very quickly realised that the A350 pilot had not complied with the instruction to fly heading 095° and that a loss of separation was about to occur. Avoiding action instructions were initially passed to the pilot of the A350, who readback the initial heading of 095° and not the avoiding action heading of 080°. The controller picked up the incorrect readback and corrected the pilot, repeating the instruction twice. When the controller did not receive an accurate readback from the A350 pilot they turned their attention to the B787 pilot and issued them with avoiding action instructions. This was then followed by further avoiding action to the A350 pilot and then Traffic Information to the B787 pilot that enabled the pilot to visually acquire the A350.

The controller used every means at their disposal to regain the required minimum separation with the least possible delay. They effectively discharged their responsibilities in the provision of a Radar Control Service and should be commended for their defensive controlling techniques and timely actions.

### **UKAB Secretariat**

The B787 and A350 pilots share an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>3</sup>. Pilots are required to comply with ATC instructions within Class A airspace.

Required separation was 3nm horizontally or 1000ft vertically.

### **Comments**

The B787 Operating Company reports that, from their perspective, a query was sent to the providers of their TCAS equipment to confirm whether the B787 should have generated a TCAS RA/TA alert. It was confirmed that the separation and aircraft parameters were such that the aircraft did not reach the threshold for either alert.

### **Summary**

An Airprox was reported when a B787 and an A350 flew into proximity in the London CTA at 1557hrs on Tuesday 23<sup>rd</sup> October 2018. Both pilots were operating under IFR in VMC and were in receipt of a Radar Control Service from the Heathrow Final Director.

### **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.

<sup>1</sup> Section 1, Chapter 3, Separation Standards.

<sup>2</sup> Section 1, Chapter 3, Loss of Separation.

<sup>3</sup> SERA.3205 Proximity.

Looking first at the actions of the A350 pilot, the Board noted that the need to conduct a go-around was always a high workload situation for pilots involving aircraft reconfiguration, climb instructions, speed control, heading changes and likely reconfiguration of aircraft FMS data. In these circumstances, the PNF would be communicating with ATC whilst the PF would be responding to any instructions from ATC whilst reconfiguring and flying the aircraft. Notwithstanding, such eventualities are practiced and subject to well-defined Crew Resource Management procedures that should be pre-briefed as a potential eventuality before the approach. In this instance, although the PNF had correctly readback the initial heading as 095°, it was likely that the PF had either misheard the clearance or had mistakenly set 195° on the FCU instead. In discussing how this might have occurred, a Civil Airline Pilot member suggested that there had possibly been a Crew Resource Management communication breakdown in the cockpit. The pilots should have cross-checked the heading selected and, if there had been any discrepancy, this would then have been resolved. Some members wondered how prepared the crew were for the potential go-around, and whether the crew had been distracted by the increased workload. Even when the controller had subsequently instructed the pilot to turn left immediately heading 080° the pilot had readback heading 095°, and this hinted at a serious loss of situational awareness and lack of assimilation of information by the A350 crew, especially given that the controller repeated the instruction on two occasions with no further response received from the A350 crew. It was not until this was followed by an avoiding action left turn heading 360° that the A350 crew readback the correct information.

For their part, the B787 crew had detected that the A350 was not responding correctly to ATC instructions and were monitoring the situation. With the A350 heading towards their approach path, the controller issued the B787 crew with an avoiding action turn heading 180° and, with Traffic Information also passed to the B787 crew, they were able to immediately carry out the turn and subsequently report visual contact with the A350.

The Board were quick to commend the actions of the Heathrow Final Director, who had promptly detected that the A350 pilot was turning onto an incorrect heading and had passed timely and effective instructions to its pilot to try and resolve the situation. Because the A350 pilot was not responding to her remedial heading instructions, she then swiftly issued an avoiding action turn to the B787 pilot to resolve the impending conflict before the A350 pilot then read back his avoiding action turn onto 360°.

Turning to the cause and risk of the Airprox, the Board quickly agreed that the incident had occurred because the A350 pilot did not comply with his clearance and had turned into conflict with the B787. That being said, the Board noted that, at CPA, the two aircraft were still separated by 100ft vertically and 2.6nm horizontally. Accordingly, it was judged that there had been no risk of a collision (primarily due to the timely and effective actions of the controller) although it could not be said that normal safety standards and procedures had pertained (Category E). Therefore, because safety had been degraded, the Board assessed the risk as Category C.

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

Cause: The A350 pilot did not comply with his clearance and turned into conflict with the B787.

Degree of Risk: C.

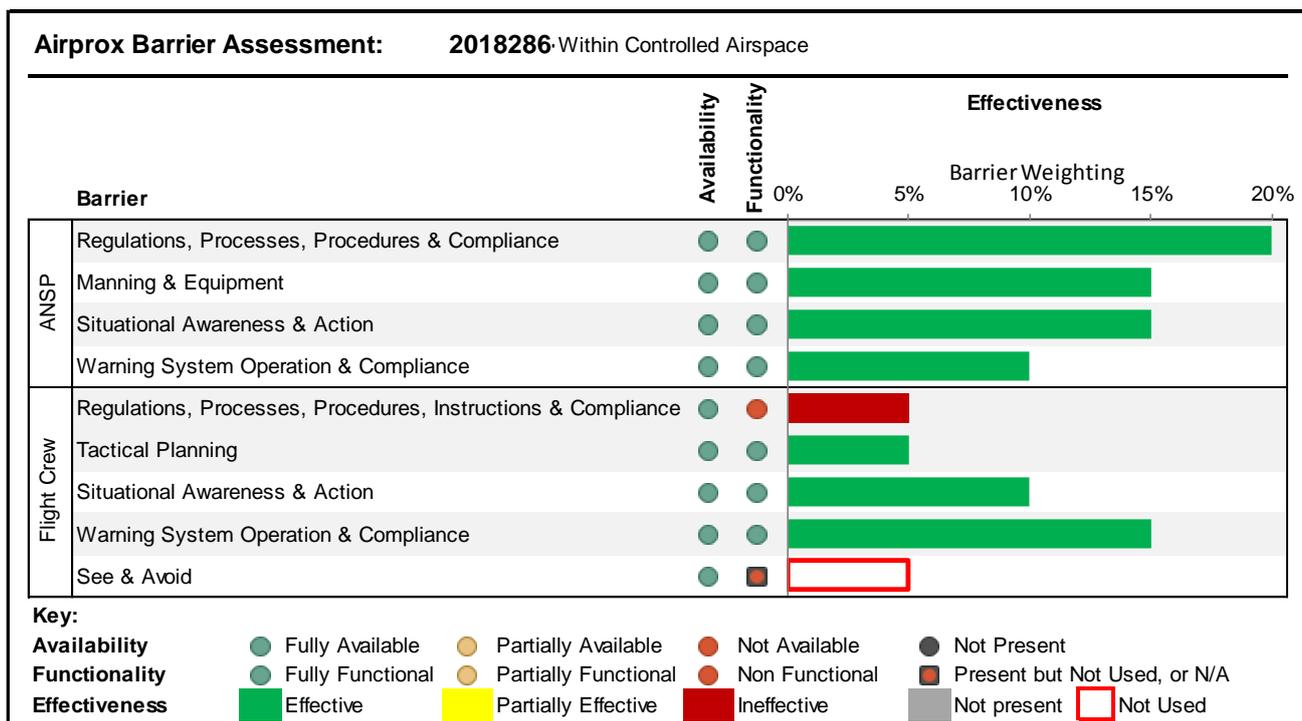
Safety Barrier Assessment<sup>4</sup>

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

**Flight Crew:**

**Regulations, Processes, Procedures, Instructions and Compliance** were assessed as **ineffective** because the A350 pilot did not comply with his ATC clearance.

**See and Avoid** was assessed as **not used** because the situation was resolved at sufficient range without the need for the pilots to visually avoid each other (accepting that the B787 pilot was visual with the A350 in the latter stages of the incident and could conceivably have employed this barrier if it had been required).



<sup>4</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).