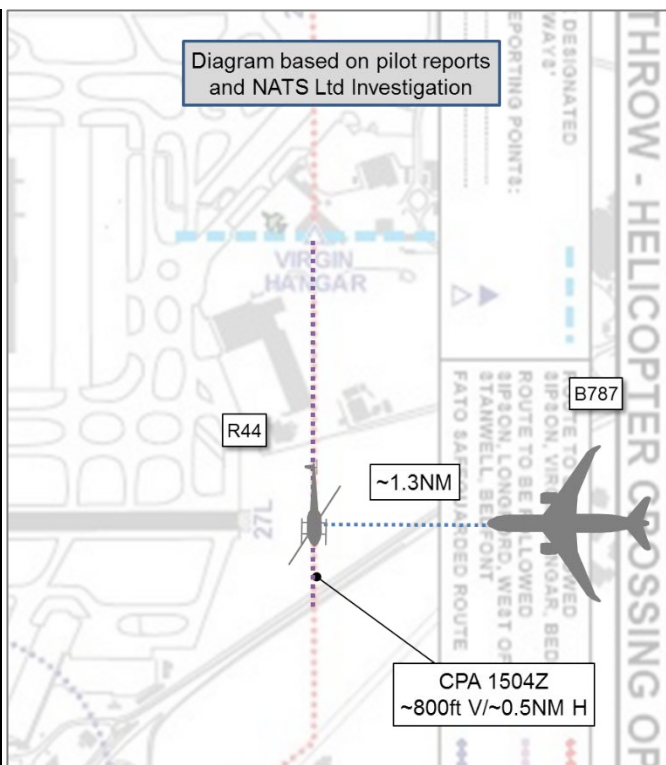


AIRPROX REPORT No 2019268

Date: 08 Sep 2019 Time: 1504Z Position: 5128N 00025W Location: LHR RW27L

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	B787	R44
Operator	CAT	Civ Helo
Airspace	London CTR	London CTR
Class	D	D
Rules	IFR	VFR
Service	ACS	ACS
Provider	Heathrow Tower	Heathrow Tower
Altitude/FL	200ft	900ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Company	Silver, grey
Lighting	Landing, nav, strobes	Landing, strobe
Conditions	VMC	VMC
Visibility	20km	10NM
Altitude/FL	700ft	800ft
Altimeter	QNH (NK hPa)	QNH (1022hPa)
Heading	272°	180°
Speed	145kt	0-70kt
ACAS/TAS	TCAS II	Not fitted
Alert	Unknown	None
Separation		
Reported	200ft V/2NM H	1000ft V/1NM H
Recorded	700ft V/0.3NM H ¹	



THE B787 PILOT reports that they checked in with Heathrow Tower at 5nm on the ILS for RW27L. The controller gave them their sequence to land and traffic information regarding a helicopter holding over the Virgin hangars at about 500ft. He heard the controller ask the helicopter pilot if he was visual with them and subsequently cleared him to cross the final approach path of 27L after them. The helicopter pilot acknowledged the clearance using nonstandard phraseology and sounded confused. He then crossed in front of them, against his clearance, causing a loss of separation and in direct conflict with the missed approach path. The loss of separation was briefly assessed and a continued landing considered the safer option than manoeuvring or going around. The B787 pilot noted that the Airprox occurred during a high workload phase of flight but that, during the descent briefing, they had discussed one of the threats being a 'land after' clearance as the VMC conditions would allow it.

The pilot assessed the risk of collision as 'Low'.

THE R44 PILOT reports that he entered the Heathrow Control Zone at Reporting Point Northwood and travelled southbound on Helicopter Route H9 (crossing Heathrow), intending to continue on H9 southbound and exit the zone at Reporting Point Oxshott West. He was familiar with the Heathrow Crossing Procedure and London Helicopter Routes having crossed Heathrow on multiple occasions prior. He submitted a Class D Transit pre-notification on the NATS website approximately 4hrs prior to his flight. When north of Northwood and on frequency with Heathrow Radar, he was given clearance to enter the zone at Northwood and to transit southbound on H9 with a clearance limit north of Sipson. En-route to Sipson, Heathrow Radar handed him over to Heathrow Tower. While holding north of Sipson, Heathrow Tower gave him clearance to pass west of RW27R via the helicopter crossing routing, and to hold over the Virgin Hangars, between runways 27L and 27R and west of the thresholds. As he came to a hover over the Virgin Hangars, the Tower controller asked if he was visual with the inbound

¹ Obtained from NATS Ltd Investigation.

B787. He was looking directly at the aircraft and replied “visual with inbound traffic”. On the subsequent call, he heard the end of his callsign and instructions to cross east of the threshold of RW27L. Upon hearing the instruction he crossed southbound on the prescribed helicopter procedures/routing abeam RW27L without delay. This was performed quickly and took about 10secs to cross and be clear. While transitioning forward, he called on the radio that he was crossing abeam RW27L threshold without delay. After crossing and clear to the south, the Tower controller informed him that he did not give clearance to cross. The R44 pilot gave a brief reply that he had heard the transmission as an instruction to cross. He apologised if he crossed in error due to mis-hearing the transmission. Nothing further was said on frequency nor was he instructed to call afterwards, but upon landing he called Heathrow Radar anyway to ask about the occurrence and discuss. The R44 pilot noted that during crossing the threshold of RW27L, he was visual with the inbound aircraft, he did not consider himself to be in danger of collision and had been given a very similar clearance on a prior Heathrow crossing. During a subsequent phone call with a Heathrow Safety Officer, and hearing the R/T transcripts, he understood that there was a misunderstanding on the frequency between the controller and himself, namely that he missed the R/T phrase “Behind” in the transmission. During the discussion, he learned that ICAO had formally changed the phraseology term from “After” to “Behind”. The R44 pilot felt that background noise on frequency and pronunciation of the phrase “Behind” had led to the occurrence.

The pilot assessed the risk of collision as ‘None’.

THE HEATHROW AIR(S) 27L ARRIVALS CONTROLLER reports that he had a pre-note from TC(SVFR) of a helicopter crossing from north to south with the traffic being identified to him when north of Northwood. He warned Air(N) Departures of the pending helicopter crossing and checked for possible TEAM traffic. The R44 pilot called him when approaching Sipson and was instructed to route to the Virgin Hangar to hold. He then informed Air(N) that he would be crossing their runway behind the threshold. The Arrivals sequence had an A380 on short final followed by [the Airprox] B787 being the next to land. He passed traffic information to [B787 C/S] on the position of the helicopter on first contact. He waited for the A380 to land so that there couldn't be any misidentification with a conditional crossing clearance and then asked [R44 C/S] "Are you visual with the [company] 787 at 3 miles?". [R44 C/S] confirmed that he was and so he subsequently issued him with "[R44 C/S], behind the landing [company] 787, cross runway 27L, behind". Initially [R44 C/S] did not read back the conditional clearance and so the controller transmitted again to reiterate the instruction to him. The conditional clearance was readback correctly he recalled, and he turned his attention to other tasks. On checking position of [R44 C/S] he noticed that he had already commenced the crossing and, at the same time, he was informed of this by the Air(N) controller. He felt at the time that any turn back towards the central area of the airport would have been counter-productive and increased the risk of further errors and so took the decision to allow him to continue. [B787 C/S] informed him that the helicopter was crossing ahead rather than behind. [R44 C/S] was informed that they were instructed to cross behind the [company] 787, although he was unaware of their response.

Factual Background

The weather at Heathrow was recorded as follows:

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METAR COR EGLL 081520Z AUTO 30007KT 250V330 9999 NCD 17/03 Q1022 NOSIG=
METAR COR EGLL 081450Z AUTO 35006KT 290V040 9999 NCD 17/03 Q1022 NOSIG=
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Analysis and Investigation

UKAB Secretariat

The B787 and R44 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard². The R44 pilot was obliged to follow any ATC clearance issued within Class D airspace. The NATS Ltd Investigation established that the

² SERA.3205 Proximity.

R44 crossed the nose of the B787 at a separation of about 1.3nm and that CPA occurred as the B787 passed behind the R44.

NATS Ltd Occurrence Investigation

RTF Transcript and comments:

*AIR S "[R44 C/S], Heathrow Tower, route Sipson, hold at the Virgin Hangar"
R44 "Route Sipson, hold at the Virgin Hangar, [R44 C/S]"*

15:01:58

*B787 "Tower hello, [B787 C/S], 5 miles ILS 27L"
AIR S "[B787 C/S] continue approach 27L, you are number 2, surface wind 330 degrees 5 kts gusting 17 kts"
B787 "Continue [B787 C/S]"
AIR S "[B787 C/S], traffic information, there will be a helicopter holding between the runways as you approach the airfield"
B787 "[B787 C/S] roger"*

15:02:45

*R44 "[R44 C/S] holding at Virgin"
AIR S "[R44 C/S] report visual with the [Company] 787 at 3 miles"
R44 "Visual with inbound [R44 C/S]"
AIR S "[R44 C/S] roger, behind the landing [Company] 787, cross runway 27L behind"
No response
AIR S "[R44 C/S], confirm behind the landing [Company] 787, cross runway 27L behind"
R44 "[R44 C/S], Landing [Company], visual, crossing runway [R44 C/S], proceeding without delay"*

This incorrect readback went unchallenged. At this point, [R44 C/S] is between the two runways, [B787 C/S] is at ~1.7nm for 27L, 600ft.

15:03:25

*AIR S "[B787 C/S], cleared to land runway 27L, surface wind 330 degrees..."
B787 "Cleared to land 27L, [B787 C/S], the helicopter is actually crossing the runway now"
At this point the radar shows the helicopter just about to pass east of the 27L threshold, with [B787 C/S] at ~1.3nm 500ft.

AIR S "[R44 C/S] your instruction was behind the [Company] 787"
R44 "[R44 C/S] I heard that, transferred fine. [R44 C/S] sorry"
AIR S "[B787 C/S], confirm cleared to land runway 27L, surface wind 330 degrees less than 5kts, gusting 15kts"*

This instruction was given as the helicopter is observed to be south of the runway

B787 "Ok, landing 27L, [B787 C/S]"

As the B787 touches down on 27L, the R44 is seen on radar 0.5nm south, indicating 900ft.

After obtaining the controllers version of events, the radar replay was observed along with the [R/T] for the event. This highlighted that [R44 C/S] had misunderstood the instruction they had been given, and the incorrect readback from [R44 C/S] had not been challenged by the ATCO. The ATCO could offer no reason why they hadn't heard the incorrect readback. The controller felt they had put in

safeguards to ensure the correct procedure would be followed, and passed appropriate traffic information to both crews.

The pilot of [R44 C/S] was also contacted and volunteered that he had crossed the field many times and was familiar with the procedure. He suggested that on previous visit to Heathrow he had not received conditional clearances and always been asked to expedite across the runway. As such he mistook the reference to the traffic at 3nm to be a warning to cross quickly. He acknowledged that he had not heard the word 'behind' and felt comfortable with the separation against the 787.

Summary

An Airprox was reported when a B787 and an R44 flew into proximity near the threshold to Heathrow RW27L at 1504Z on Sunday 8th September 2019. Both pilots were operating in VMC in receipt of an Aerodrome Control Service, the B787 pilot under IFR and the R44 pilot under VFR.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments. Although not all Board members were present for the entirety of the meeting and, as a result, the usual wide-ranging discussions involving all Board members were more limited, sufficient engagement was achieved to enable a formal assessment to be agreed along with the following associated comments.

The Board quickly agreed that this incident occurred because the R44 pilot did not assimilate his clearance and, mistakenly thinking that he had been cleared to cross immediately, crossed ahead of the approaching B787 rather than behind, as instructed (**CF4, CF5, CF6**). Unfortunately, the controller then did not detect the R44 pilot's incorrect readback of his crossing clearance (**CF1, CF2**). Although the situation was not desirable, the R44 pilot, operating under VFR, expedited his crossing after having visually assessed that he would remain clear of the B787. For his part, once the controller had been warned by the B787 pilot, he assessed that it would be more expeditious to allow the R44 to continue rather than call it to return.

The Board determined from the radar recordings that, ultimately, the R44 crossed about 1.3nm ahead of the B787 thereby not creating an immediate hazard to its approach or potential missed approach. Members noted that the R44 pilot was apparently experienced in such crossings at Heathrow and did not perceive there to have been a conflict (**CF8**), although the B787 pilot (**CF9**) and controller (**CF3**) were understandably concerned by the proximity of the 2 aircraft because they were unsure of the R44 pilot's intentions and situational awareness. In the final analysis, members agreed that the incident warranted a risk rating of Category C in that, although there was no practical risk of collision, safety had been reduced because normal safety procedures had not been complied with.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

2019268			
CF	Factor	Description	Amplification
Ground Elements			
• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• ATM Regulatory Deviation	Regulations and/or procedures not complied with
• Situational Awareness and Action			
2	Human Factors	• ATM Personnel Hear back	Incorrect readback not detected/corrected
3	Human Factors	• Personnel Perception Events	Concerned by the proximity of the aircraft
Flight Elements			
• Regulations, Processes, Procedures and Compliance			
4	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
• Tactical Planning and Execution			
5	Human Factors	• Action Performed Incorrectly	Incorrect or ineffective execution
6	Human Factors	• Action Performed Incorrectly	Did not follow instructions
• Situational Awareness of the Conflicting Aircraft and Action			
7	Human Factors	• Monitoring of Other Aircraft	Pilot did not sufficiently integrate with the other aircraft
• See and Avoid			
8	Human Factors	• Perception of Visual Information	Pilot perceived there was no conflict
9	Human Factors	• Perception of Visual Information	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C.

Recommendation: Nil.

Safety Barrier Assessment³

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

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the controller *de facto* did not detect and challenge the incorrect readback of the R44 pilot's crossing clearance.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because although the R44 pilot incorrectly assimilated his crossing clearance as 'without delay', he crossed ahead having assessed appropriate separation under VFR.

³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Tactical Planning and Execution was assessed as **ineffective** because the R44 pilot did not cross in accordance with his clearance.

