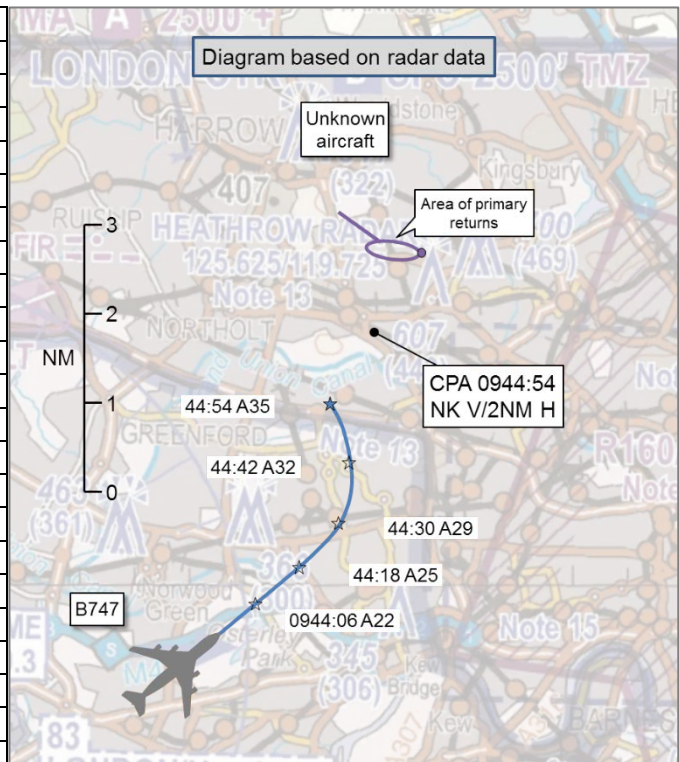


## AIRPROX REPORT No 2019187

Date: 07 Jul 2019 Time: 0945Z Position: 5133N 00018W Location: London

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	B747	Unknown
Operator	CAT	Unknown
Airspace	London TMA	
Class	A	
Rules	IFR	
Service	Radar Control	
Provider	Swanwick	
Altitude/FL	3500ft	
Transponder	A, C, S	Primary only
<b>Reported</b>		Not reported
Colours	Company	
Lighting	Standard	
Conditions	IMC	
Visibility	In cloud	
Altitude/FL	2000ft	
Altimeter	QNH (1018hPa)	
Heading	070°	
Speed	190kt	
ACAS/TAS	TCAS II	
Alert	None	
<b>Separation</b>		
Reported	~2NM	
Recorded	NK V/~2NM H	



**THE SWANWICK CONTROLLER** reports that the B747 pilot was given an early turn from the SID as it was in conflict with a primary return believed to be infringing traffic.

**THE B747 PILOT** reports departing on initial climb for the SID when, on hand-over to departures, they were informed of an aircraft on radar with no height information. He reported they were in cloud and the controller requested a left turn on to heading 345°. Shortly after, the controller requested a 'hard left turn' on to heading 300° to avoid the unknown traffic crossing left to right in the 11 o'clock. The pilot disconnected the autopilot and increased bank angle to increase rate of turn. The controller advised that they were clear of the unknown traffic and autopilot was reengaged. The departure was continued normally, and ATC advised him that an Airprox would be filed.

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

**THE UNKNOWN AIRCRAFT:** Enquiries were made at airfields close to the first and last recorded radar positions, but the pilot could not be traced.

### **Factual Background**

The weather at Heathrow was recorded as follows:

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EGLL 070920Z AUTO 09007KT 060V120 9999 OVC011 15/14 Q1017 RERA REDZ BECMG BKN015
EGLL 070950Z AUTO 08006KT 9999 BKN014 OVC026 16/13 Q1017
EGLL 071020Z AUTO 09007KT 9999 OVC019 16/13 Q1017 NOSIG
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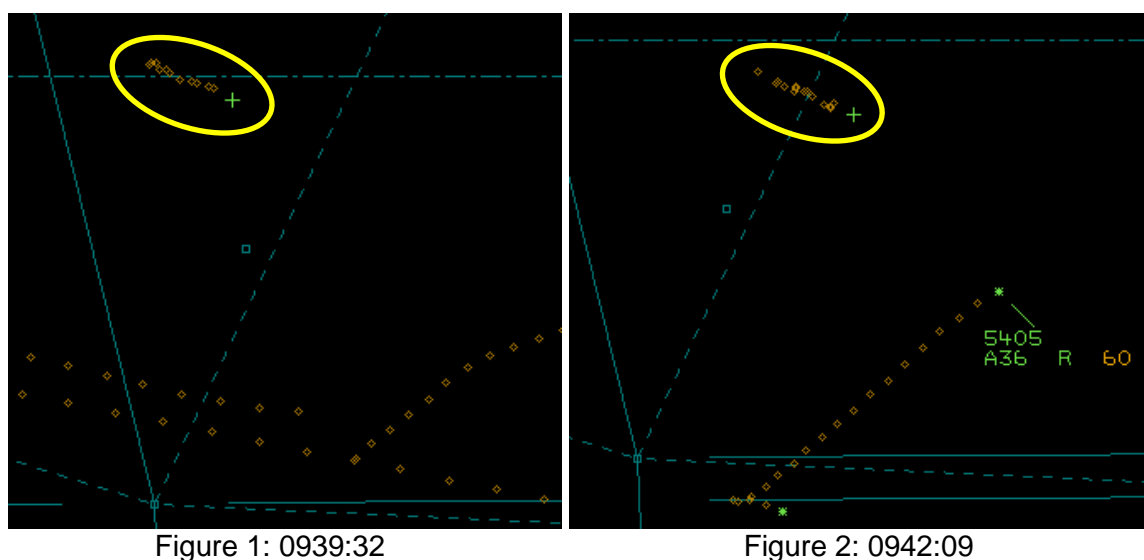
## Analysis and Investigation

### NATS Occurrence Investigation

At 0938, SVFR controller noticed a primary contact entering the Heathrow CTR approximately 4nm east of Denham activating pCAIT. Due to the persistence of the return, he considered this to be a genuine aircraft and so notified the TC GS Airports and the Heathrow Tower Supervisor. At 0944, northerly departures from Heathrow were suspended. [B747 C/S] was already airborne and the TC NW DEPS controller passed traffic information to the pilot on the primary return. He then gave a heading instruction to turn left on to 315 degrees. The pilot did not report seeing another aircraft as they were in IMC. At 0945 the primary return had disappeared from radar. There were no further radar returns that could be associated with the possible infringer.

### UKAB Secretariat

Figures 1 and 2 show the radar recording of the unknown track that caused pCAIT to alert.



The B747 and unknown aircraft 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>1</sup>. The unknown aircraft pilot was not permitted to enter the London CTR/TMA without a clearance to do so.

### Summary

An Airprox was reported when a B747 and an unknown aircraft flew into proximity at 0945 on Sunday 7<sup>th</sup> July 2019. The B747 pilot was operating under IFR in VMC in receipt of a Radar Control Service from Swanwick.

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

Information available consisted of a report from the B747 pilot, radar photographs/video recordings, a report from the air traffic controller involved and a report from the appropriate operating authority. 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.

Members first discussed the characteristics of the primary return and were informed that the primary track was only apparent on one of the 3 local area radars and that the nearest radar, the Heathrow 10cm, did not display the track. Members therefore wondered whether the returns were actually an aircraft or could have been due to radar effects other than that generated by an aircraft, such as

<sup>1</sup> SERA.3205 Proximity.

anomalous propagation (anaprop) due to temperature, pressure or water vapour effects on atmospheric refractive index. On the one radar that did display the primary returns, it was quite clearly identifiable as a track, with a consistent southeasterly progression (see Figure 1). Overall, members felt that this was sufficient to assert that the returns were most likely generated by an aircraft rather than anaprop, although this could not be conclusively determined.

The primary track was noticed by the SVFR controller and a warning passed to the Group and Tower supervisors. Members noted that a total of 6mins had elapsed between the warning and suspension of northerly departures, which, although acknowledging that time would be required to make a threat assessment and enact mitigations, the Board felt was not particularly timely (**CF2**). Consequently the B747 pilot took-off on a northerly departure and only late avoiding-action could be passed (**CF1**). The Board also noted that the B747 TCAS could not provide collision avoidance guidance on the non-transponding aircraft to the pilot (**CF7**) and so he was totally reliant on ATC providing him with appropriate information and avoiding action.

As for the suspected unknown aircraft, the Board were at a loss to understand how, if it was an aircraft, a pilot could consider undertaking such an action unless they had completely lost situational awareness. If it was an aircraft then their flight planning and execution were clearly deficient (**CF4**), and clearance to enter the London CTR/TMA had *de facto* not been obtained (**CF3, CF5, CF6**). The possibility existed that the pilot was lost, but the track direction was consistent, did not wander significantly and indicated that the aircraft was being flown directly to a destination. Sadly, the Board were unable to trace an aircraft, and hence the pilot, to ascertain their perspective of the incident.

The Board then turned to an assessment of the risk. Some members felt that the actions of the controller were such that risk of collision had been averted, risk Category C, whilst others felt that without knowing the altitude of the primary contact, and without any confirmatory sighting by the B747 pilot, CPA could not be measured and hence an assessment of risk was not possible. After some further discussion, the Board agreed with the latter view, that there was insufficient information available to determine the risk involved, and recorded a risk of Category D.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

	2019187		
CF	Factor	Description	Amplification
	<b>Ground Elements</b>		
	<b>• Situational Awareness and Action</b>		
1	Human Factors	• Conflict Resolution - Provided Late	
	<b>• Electronic Warning System Operation and Compliance</b>		
2		• Any other event	pCAIT warning not actioned in sufficient time
	<b>Flight Elements</b>		
	<b>• Regulations, Processes, Procedures and Compliance</b>		
3	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
	<b>• Tactical Planning and Execution</b>		
4	Human Factors	• Action Performed Incorrectly	Incorrect or ineffective execution
5	Human Factors	• Airspace Infringement	
6	Human Factors	• Communications by Flight Crew with ANS	Pilot did not communicate with appropriate service provider
	<b>• Electronic Warning System Operation and Compliance</b>		
7	Technical	• ACAS/TCAS System Failure	Incompatible CWS equipment

Degree of Risk: D

Recommendation: Nil.

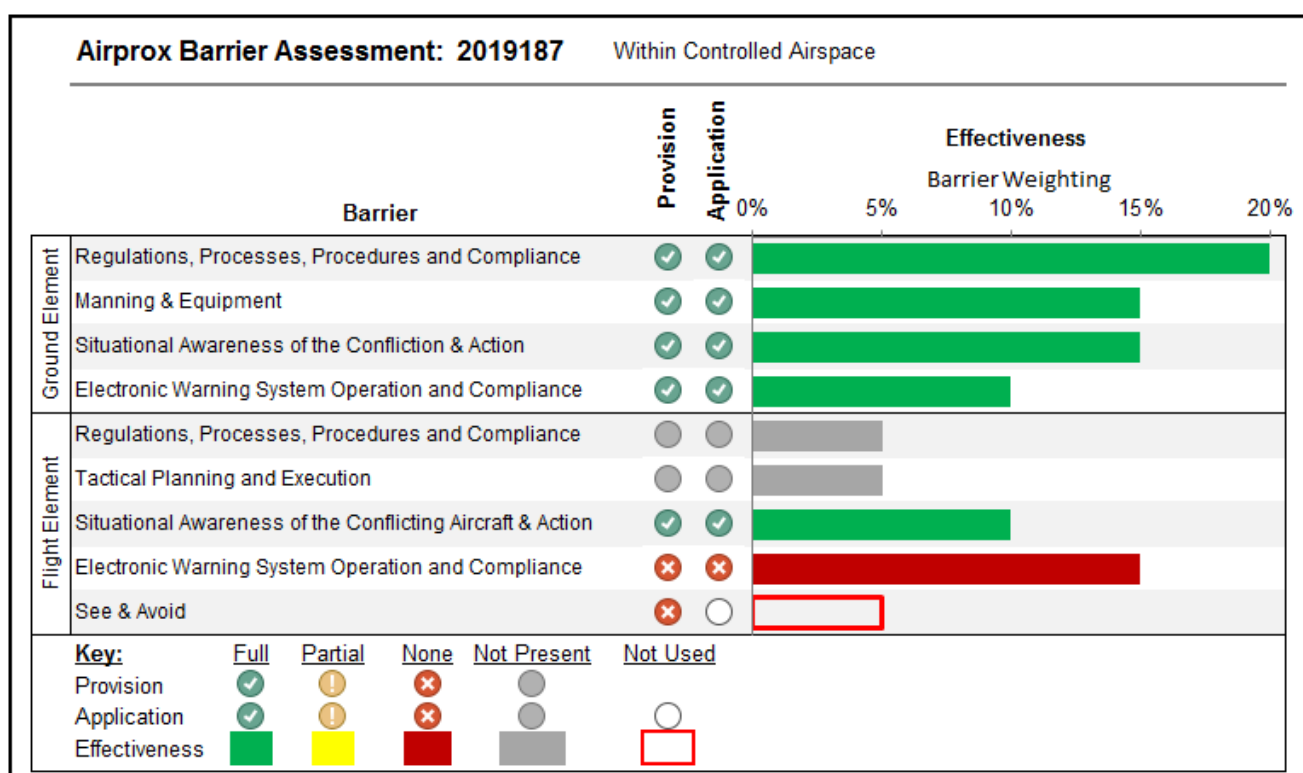
### Safety Barrier Assessment<sup>2</sup>

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that without positive confirmation that the track was an aircraft it was not possible to assess many of the safety barriers other than to comment that:

#### **Flight Elements:**

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the B747 TCAS was incompatible with the suspected unknown aircraft, which was not transponding.

**See and Avoid** were assessed as **not used** because of the separation range and because the B747 was in cloud.



<sup>2</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).