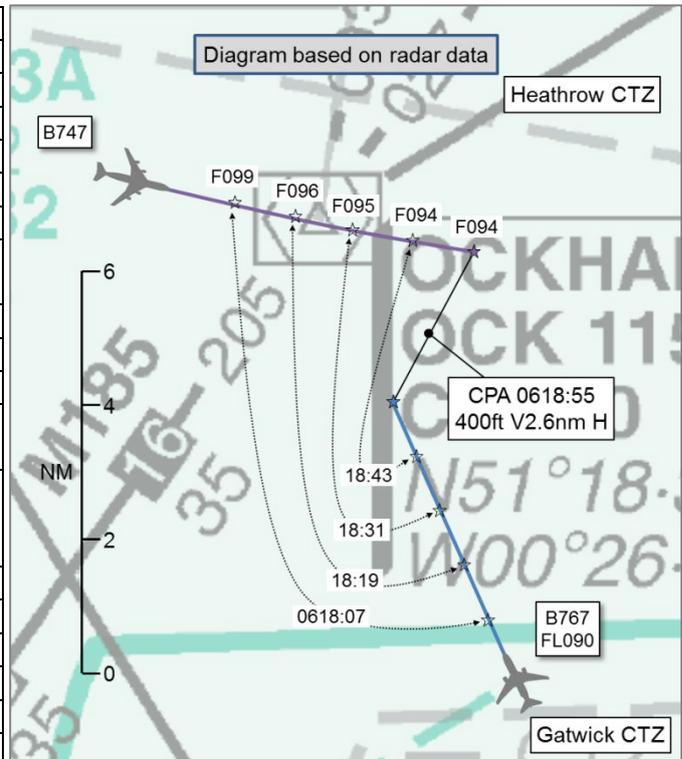


**AIRPROX REPORT No 2015196**

Date: 30 Oct 2015 Time: 0619Z Position: 5117N 00023W Location: Ockham hold

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	B767	B747
Operator	CAT	CAT
Airspace	London TMA	London TMA
Class	A	A
Rules	IFR	IFR
Service	Radar Control	Radar Control
Provider	Heathrow Approach	Heathrow Approach
Altitude/FL	FL90	FL94
Transponder	A/C/S	A/C/S
Reported		
Colours	Company colours	Company colours
Lighting	Beacon, strobes, position, Logo, landing	NK
Conditions	IMC	IMC
Visibility	Nil	Nil
Altitude/FL	FL80	FL95
Heading	330°	090°
Speed	230kt	225kt
ACAS/TAS	TCAS II	TCAS II
Alert	TA	TA
Separation		
Reported	500ft V/2nm H	400ft V/2-3nm H
Recorded	400ft V/2.6nm H	



**THE BOEING 767 PILOT** recalled that he was in the OCK hold at FL80 [UKAB Note: in fact he was at FL90]. Another aircraft joined the hold descending to the same level in front of them. He was alerted to the other aircraft on receiving a TCAS TA. He recollected that the other aircraft crossed about 2nm ahead and 500ft above after levelling at FL85. They received clearance, he thought, to expedite descent to FL70.

He assessed the risk of collision as ‘Low’.

**THE BOEING 747 PILOT** reports that ATC cleared them to descend to FL90. On descending through FL100 and approaching the OCK hold, traffic was noted by the flight crew in the OCK hold at FL90 and converging. They levelled at ‘9500ft’ and soon after received a TCAS TA. ATC issued them with an avoiding-action heading change (he recalled heading 300° off the OCK2F SID). They complied with the avoiding-action clearance. The closest approach was estimated to be 2-3nm laterally and 400ft vertically. ATC subsequently informed them that they had been incorrectly issued a FL90 clearance by the previous sector.

He assessed the risk of collision as ‘Medium’.

**THE SWANWICK TERMINAL SOUTH CONTROLLER** reports that he was working TC South banded. The B767 was established in the OCK hold, working Heathrow INT S. He saw that the stack was laddering down, and so he re-released the B747 from FL110 to FL90<sup>1</sup>. With FL90 in his

<sup>1</sup> Aircraft approaching a holding stack are released to Approach at ‘released levels’, which is the level they will be descending to when that level has been vacated.

head, he subsequently descended the B747 pilot to FL90, not realising that the level was not free in the stack. A pilot on a DVR departure then queried if he should be climbing to FL90. He realised that the pilot had taken the wrong call. He responded “Negative” and instructed him to stop his climb at 6000ft. He then transferred the B747 pilot to the Heathrow INT S controller. Shortly afterwards he saw the STCA flash white, highlighting the B767 and the B747 in the hold. He realised his mistake and tried to call the Heathrow INT S controller; the strip-marking on the CCTV of the OCK stack indicated that the Heathrow INT S controller had spotted the conflict and had issued a heading to resolve it.

**THE SWANWICK HEATHROW INTERMEDIATE SOUTH CONTROLLER** reports that the B767 was level at FL90 when the pilot of the B747 called him descending to FL90. He put the B747 pilot on a heading and passed Traffic Information. As soon as possible he instructed the B767 pilot to descend to FL80.

## Factual Background

The weather at Heathrow was recorded as follows:

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EGLL 300550Z AUTO 16013KT 9999 -RA BKN007 BKN019 TCU 14/13 Q1014 TEMPO 4000 RADZ
BKN012=
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Sunrise in London, 30 October 2015, was 0650.

## Analysis and Investigation

### CAA ATSI

ATSI had access to reports from the separate sector controllers involved, the pilots of the aircraft, the area radar recordings, RTF and a transcript of the unit position frequencies and the ATS unit investigation report.

Screenshots produced in the report are provided using the area radar recordings. Levels indicated are Flight Levels. All times UTC.

At 0616:15, the B767 pilot (code 5455), who was established in the OCK Hold at FL100, was given descent clearance to FL90 by the Heathrow Intermediate (INT) controller. The B747 (code 5471) pilot was still with the TC South controller, routing towards the OCK Hold, maintaining FL110 (Figure 1).

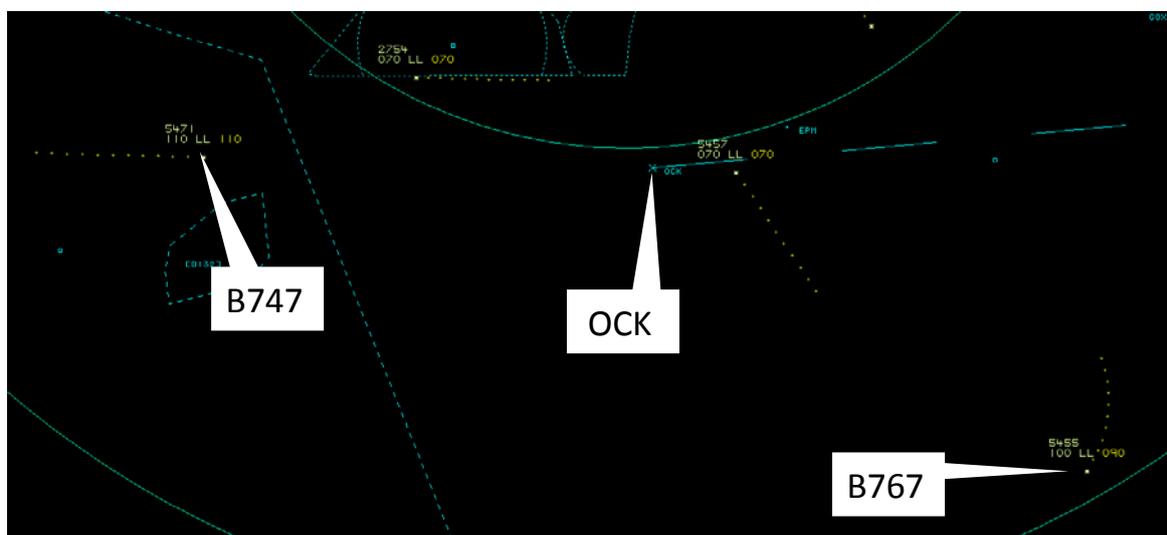


Figure 1 – 0616:15

At 0616:45, the B747 pilot was given descent by the TC South controller to FL90 (Figures 2 & 3).

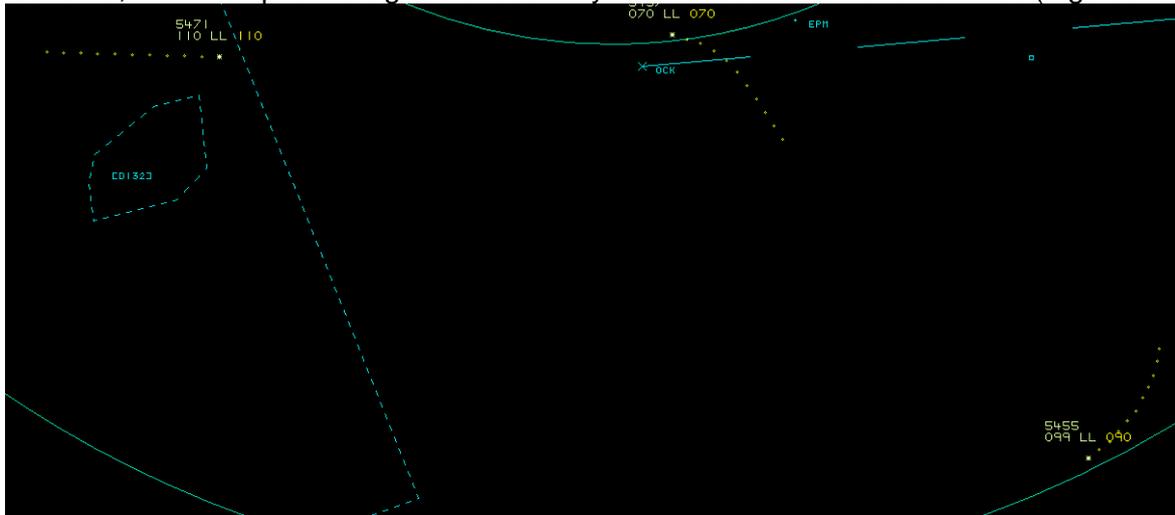


Figure 2 – 0616:45

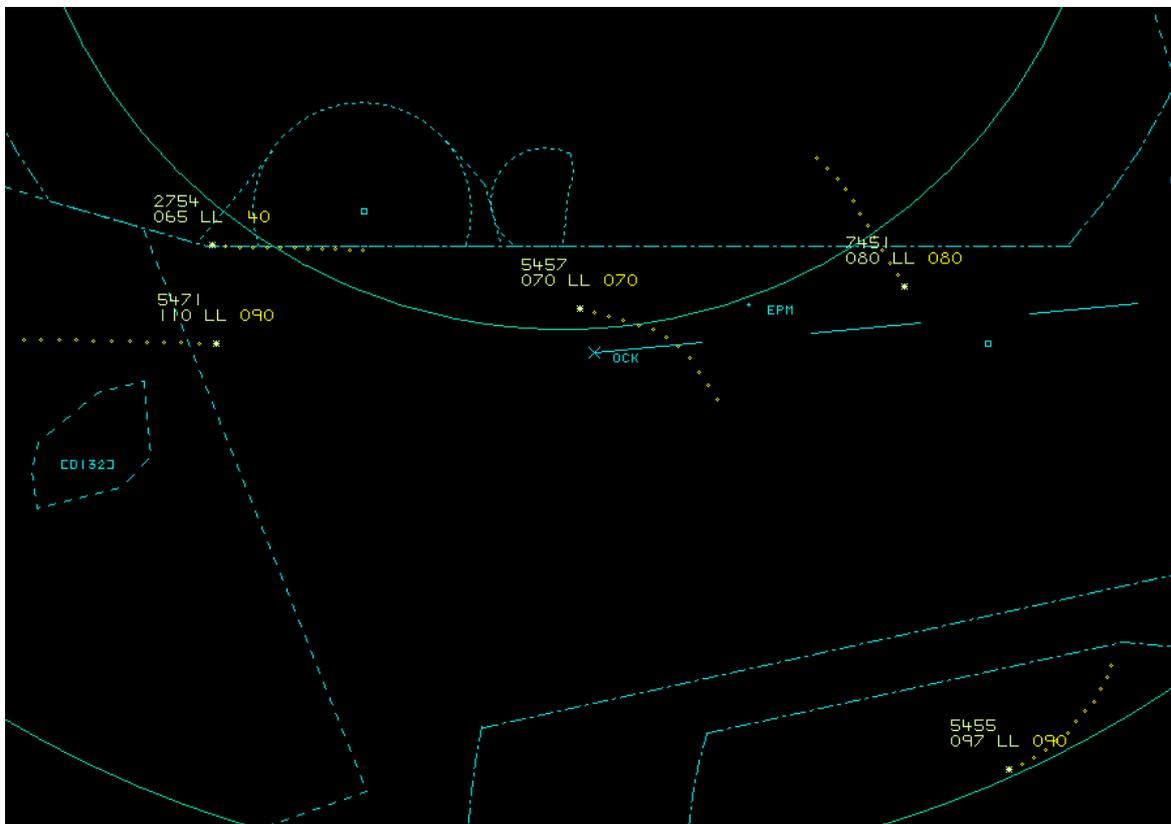


Figure 3 – 0616:56

At 0617:40, the TC South controller transferred the B747 pilot to the Heathrow INT controller.

At 0618:05, the B747 pilot reported on frequency with the Heathrow INT controller and, at 0618:20, reported taking up the hold at OCK at FL90. This was acknowledged by the controller who confirmed the instruction to hold at OCK.

At 0618:24, a Short Term Conflict Alert (STCA) was initiated, although it was cancelled at 0618:32, but at 0618:35, the Heathrow INT controller instructed the B747 pilot, then passing FL97 and just about to pass overhead the OCK VOR, to make a left turn onto heading 360°, advising him “that’s avoiding action”. The B747 pilot was informed about traffic south of him by 4nm. The B767 was 6.4nm southeast of the B747, maintaining FL90 (Figure 4).

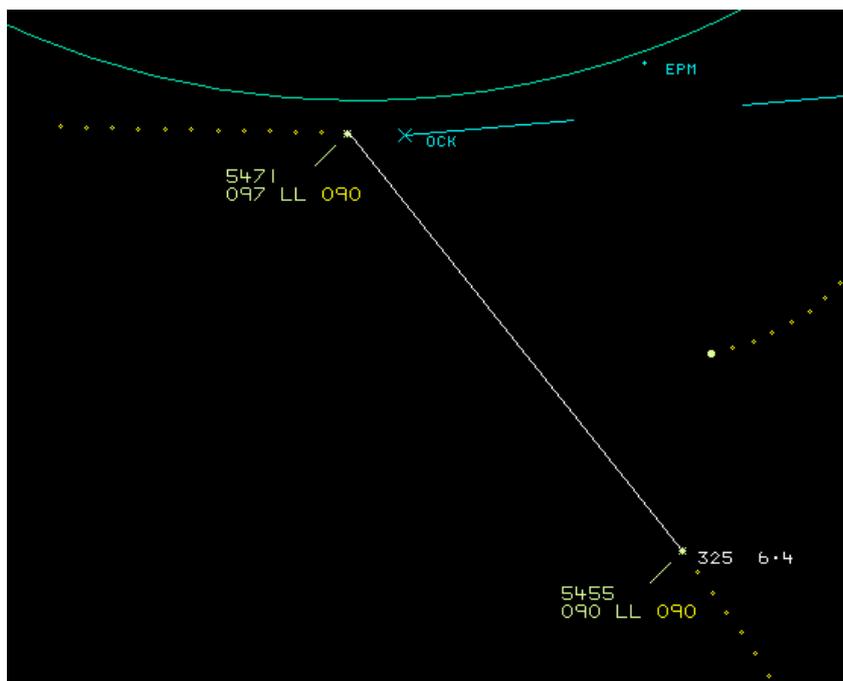


Figure 4 – 0618:35

At 0618:45, the Heathrow INT controller instructed the B767 pilot to expedite descent to FL080 (Figure 5).

CPA took place at 0618:56, with the aircraft separated by 2.6nm horizontally and 400ft vertically (Figure 6). [The B767 pilot was instructed to continue on his present heading at 0619:00.]

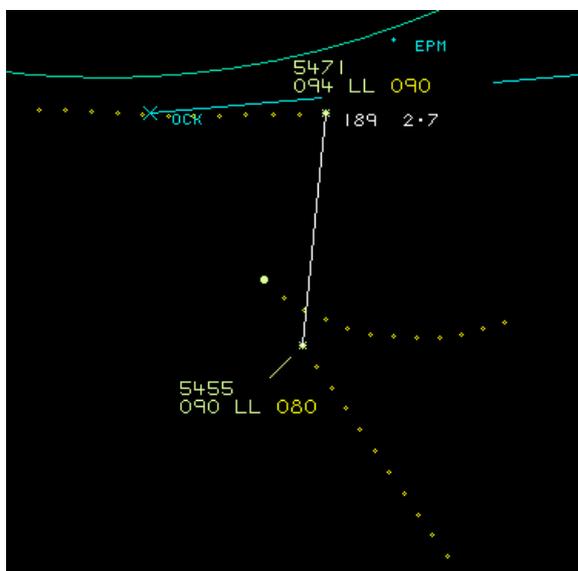


Figure 5 – 0618:45

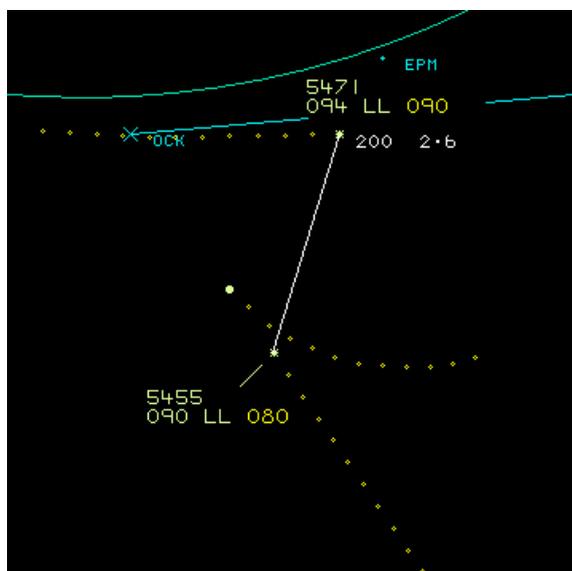


Figure 6 – 0618:56

When the TC South controller cleared the B747 pilot to FL90, he did not take into account the B767 already level at FL90 in the OCK hold. The TC South controller described workload as moderate and he had been operating with a co-ordinator. The Heathrow INT flight progress board/stack indicator was available to the TC South controller via CCTV, and was referred to in the TC South controller's report as having being used in the decision to descend the B747 pilot to FL90.

When the TC South controller cleared the B747 pilot to descend to FL90, the instruction was wrongly taken as a climb instruction by another pilot who had just departed Heathrow. That pilot's read-back, which was transmitted over the top of and therefore garbling with the read-back by the B747 pilot, went unnoticed by the TC South controller. The pilot of the Heathrow departure subsequently queried the climb instruction. The TC South controller then corrected that pilot, and instructed him to maintain the level previously assigned on departure from Heathrow (6000ft). However the conflict between the B747 and the B767 remained undetected by the TC South controller and the B747 was transferred to the Heathrow INT controller. According to the unit report, the TC South controller could not explain why he did not spot the conflict, although it was suggested in the report that the controller was distracted by the wrong call being taken by the Heathrow departure.

When the B747 pilot came onto the Heathrow INT controller's frequency, the conflict with the B767 was not immediately spotted by the controller either, despite the B747 pilot advising him that he was descending to FL90. However, less than 5 seconds later, the STCA was activated, albeit for only 8 seconds and, in response to this alert, the Heathrow INT controller turned the B747 pilot left onto a northerly heading, confirming that this was for avoiding action. The phraseology used was non-standard<sup>2</sup> and the only Traffic Information which was passed to the B747 pilot was that there was another aircraft 4nm south of its position, which was not qualified by the addition of further information on level, direction of flight, nor type of the conflicting aircraft.

The B767 pilot was then given further descent to FL80 and asked to expedite, but no reason was given, and no Traffic Information passed on the B747. Both pilots reported receiving TCAS TAs only.

## UKAB Secretariat

In Class A airspace it is the controller's responsibility to separate all aircraft from each other<sup>3</sup>. The required separation was 1000ft vertically in the holding pattern.

## Summary

An Airprox was reported when a B767 and a B747 flew into proximity at 0620 on 30<sup>th</sup> October 2015. Both pilots were operating under IFR in IMC in receipt of a Radar Control Service from Heathrow Approach. The TC South controller cleared the B747 pilot to descend towards the OCK Hold to a level still occupied by the B767 and did not detect the conflict. The Heathrow INT controller did not detect the conflict after the B747 pilot had come onto his frequency until the STCA was activated. The B747 pilot was issued with an avoiding action turn and issued with basic Traffic Information about the B767; the B767 pilot was instructed to descend to FL80 and to expedite descent. Traffic Information about the B747 was not passed. The CPA was recorded as 2.6nm horizontally and 400ft vertically.

## **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.

In debating this incident, it was readily apparent to the Board that the cause of the Airprox was that the TC South controller had cleared the B747 pilot to descend into conflict with the B767 already in the hold. Notwithstanding, the discussion then turned towards trying to understand the human factors that might have been in play behind this incident. Firstly, a Civil ATC member with experience of TC operations stated that the airspace at Ockham is routinely very busy at the time that the Airprox had occurred; because of the landing restriction at Heathrow before 0600, it was not unusual for as many

<sup>2</sup> CAP413, UK Radiotelephony Manual, Chapter 5, Page 12, example of avoiding action, 'G-CD avoiding action, turn left immediately heading 270 degrees traffic right 2 o'clock 4 miles **converging**, indicating 100 feet below slow moving'.

<sup>3</sup> CAP 493, Manual of Air Traffic Services Part 1, Section 1, Chapter 2.

as 27 aircraft to be waiting to make an approach to Heathrow via Ockham. Notwithstanding, the TC ATC member went on to explain that there were a number of ways the controller would have been able to see that FL90 was occupied in the Ockham hold; these included a strip display, a CCTV picture of the Heathrow INT's display and a stack list showing in the top left-hand corner of his radar display. However, he advised that the controller had been relatively inexperienced, that the sector had been very busy, and that the Airprox had occurred about 50min after the controller had come on duty at 0530. The Board wondered if tiredness could possibly have been a factor and the NATS advisor explained that the company and ATC Unions had regularly discussed shift patterns. The present arrangement was considered to be the best available, with the main morning shift starting at 0700; notwithstanding, some controllers were rostered to come in slightly earlier, as in this case, to help with the busy early morning traffic situation. Although it was possible that this early start might have affected the controller's performance depending how far they had travelled in to work, the requisite pre-briefing time requirement and if their sleep pattern had been disturbed, it was not reported that the controller concerned had felt tired at the time.

Turning to the specifics of the incident, the Board noted that the TC S controller had re-released the B747 at FL90, although at the time the B767 had not vacated the level. The TC ATC member explained that this is usual practice, and that the INT S controller would have expected the B747 pilot only to have been actually cleared to descend to FL90 when the level had been vacated by the B767. The TC ATC member opined that this expectation could explain why the controller had not assimilated that the B747 was descending to an occupied level when its pilot had made initial contact. Nevertheless, the Board noted that, as soon as STCA had activated, the INT S controller had issued an avoiding action turn to the B747 and had instructed the B767 pilot to expedite descent to FL80.

The Board then turned their attention to the pilots' actions. The Board noted that the B747 pilot had been aware of the presence of traffic in the Ockham hold at FL90 from his TCAS display. Before receiving a TCAS TA he had decided to level at FL94 but the Board were not able to determine whether this had been coincident with the controller issuing avoiding action and so was why he had not informed ATC that he was doing so. The Board opined that although this may have prevented TCAS RAs being received by the pilots, it was important that they informed ATC if they were not complying with previous instructions. The Board also noted that the B767 pilot had not left FL90 by the time of CPA despite having been given a clearance to do so. A Civil Airline member, noting that the CPA had occurred only 20 seconds after receiving the descent clearance, commented that it was not surprising that the B767 pilot had not commenced his descent in the short time available.

In looking at the risk in this incident, the Board noted that the required separation had not been achieved (400ft vs 1000ft required in the hold) and that avoiding action had been given by ATC. As result, they considered that this could not be considered a situation where 'normal procedures safety standards and parameters had pertained' (Category E). Notwithstanding, they also noted that the horizontal separation was 2.6nm at CPA, and they considered that the combined action taken by the B747 pilot and the avoiding-action issued by the INT S controller had both been timely and effective in preventing the possibility of the aircraft colliding. Therefore, the Board categorised the Airprox as risk Category C.

[UKAB Post-Board Note: Eurocontrol 'ACAS II Bulletins' document issues concerning pilot manoeuvring on the basis of TCAS indications before an RA has been issued<sup>4</sup>.]

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<sup>4</sup> <http://www.eurocontrol.int/articles/acas-ii-bulletins-and-safety-messages>, Bulletins 6, 16 and 19.

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

Cause: The TC South controller cleared the B747 pilot to descend into conflict with the B767 already in the hold.

Degree of Risk: C.