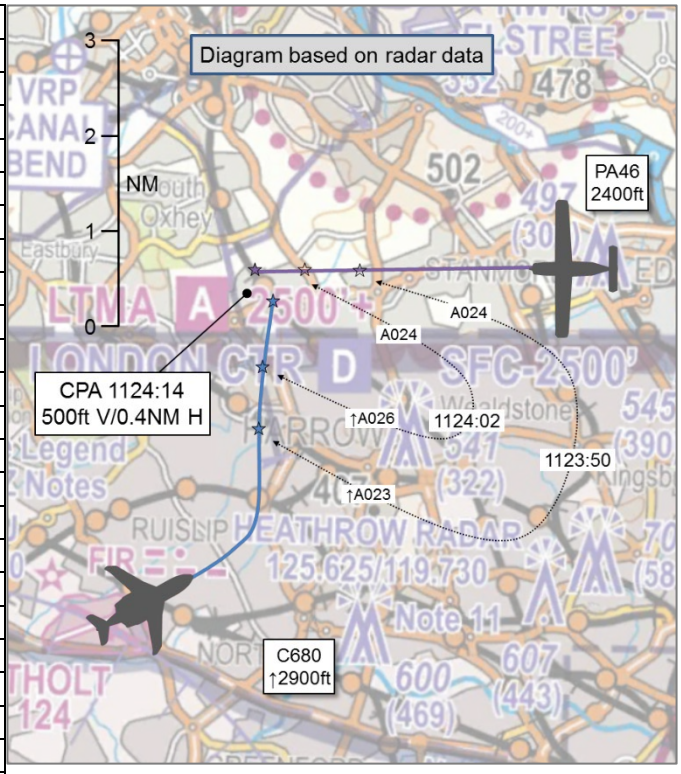
AIRPROX REPORT No 2020084

Date: 31 Jul 2020 Time: 1124Z Position: 5136N 00022W Location: 3NM N Northolt

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C680	PA46
Operator	Civ Comm	Civ FW
Airspace	London TMA	London FIR
Class	A	G
Rules	IFR	VFR
Service	Radar Control	Basic
Provider	Swanwick (Mil)	Thames Radar
Altitude/FL	2900ft	2400ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White	White, Blue
Lighting	NR	NR
Conditions	VMC	VMC
Visibility	NR	NR
Altitude/FL	2700ft	2400ft
Altimeter	NK	QNH
Heading	009°	270°
Speed	200kt	140kt
ACAS/TAS	TCAS II	TAS
Alert	RA	Information
Separation		
Reported	500ft V/2NM H	2NM H
Recorded	500ft V/0.4NM H	



THE C680 PILOT reports that they had departed from Northolt and were between ATC agencies as they switched frequencies, when they saw a light, white jet pass through their flight path. The ensuing TCAS 'climb' RA was followed by the crew at 2700ft, levelling off at 3000ft. ATC informed them that the aircraft was just outside controlled airspace. They were visual with the other aircraft at all times.

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

THE PA46 PILOT reports that they were flying level at 2400ft, in good weather conditions, when they saw a small twin-engine aircraft in the 9 o'clock. The TAS gave a traffic warning at 2NM and at this point the other aircraft was slightly above and climbing. They could see the bottom of the other aircraft and pointed it out to the passengers. There was no need to take any action, they recalled thinking that the other aircraft was not far away, but was probably IFR, inside controlled airspace and they did not consider the incident to be a safety issue.

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

THE NORTHOLT RADAR CONTROLLER reports that the pilot did not declare an Airprox at the time and they had no recollection of the event.

THE THAMES RADAR CONTROLLER reports that the PA46 was in receipt of a Basic Service. There was no mention of Airprox at the time.

Factual Background

The weather at Northolt was recorded as follows:

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METAR EGWU 311050Z 14013KT CAVOK 34/10 Q1010 NOSIG RMK BLU BLU=
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Analysis and Investigation

Military ATM

The C680 pilot was departing from RAF Northolt RW07 following a CPT 5X departure profile and was under a Radar Control Service. They received a TCAS RA to climb, which was followed, and were given Traffic Information on the PA46 detailing that it was outside controlled airspace. The C680 did not reach 3000ft by the CTR boundary as per the SID profile. The pilot reported that they were visual with the PA46 throughout.

The Northolt Departures controller was band boxing Approach and Director with no other aircraft under their control. They did not recall the incident as it was not reported at the time. They placed the C680 under a Radar Control Service and in a second transmission to the pilot passed Traffic Information on the PA46.

Figures 1-3 show the positions of the C680 and the PA46 at relevant times in the lead up to and during the Airprox. The screen shots are taken from a replay using the NATS radars, which are used by the Northolt controller, therefore, should be representative of the picture available to the controller.

The C680 had departed Northolt on a CPT 5X departure profile inside controlled airspace. The PA46 was transiting E to W outside controlled airspace. The C680 was identified and placed under a Radar Control Service, separation at this point was 2.9NM and 300ft.

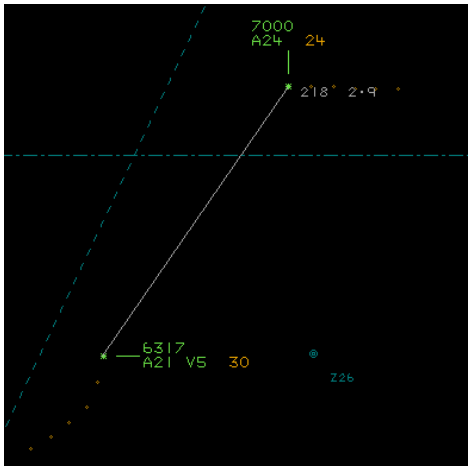


Figure 1:
C680 identified and placed under an RCS by Northolt Departures.

Twenty-two seconds later the controller gave the C680 pilot Traffic Information on the PA46, highlighting that they were outside controlled airspace. The C680 pilot reported visual with the PA46. Separation at this point had decreased to 1.4NM and 100ft.

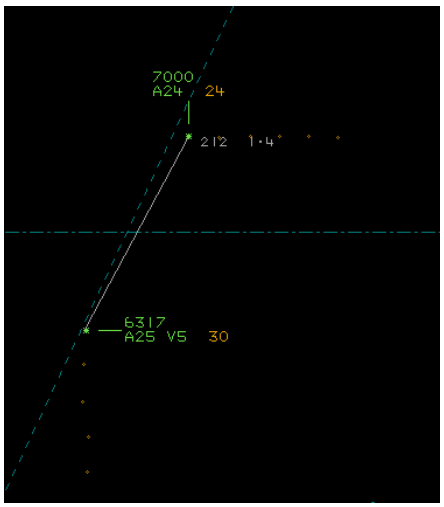


Figure 2:
Traffic Information is passed to the C680.

Thirteen seconds later CPA was measured at 0.4NM and 500ft.

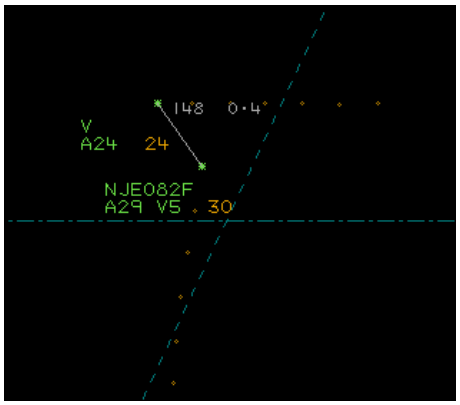


Figure 3: CPA.

The Northolt controller was band boxing multiple control positions, however, the traffic levels were extremely light with only a single aircraft departing. The controller could have passed Traffic Information earlier due to the proximity of the PA46 and the perceived slower climb rate of the C680, which may have prompted the pilot to increase their rate of climb. Operating from RW07 gave less track distance for pilots to achieve the required altitude prior to crossing the CTR boundary. This, combined with the PA46 operating at the upper limits of Class G airspace in close proximity to the CTR boundary, led to the incident. Had the C680 pilot followed the SID and achieved the required 3000ft by the CTA boundary, separation would have been greater.

UKAB Secretariat

The Northolt Compton SID is reproduced below:

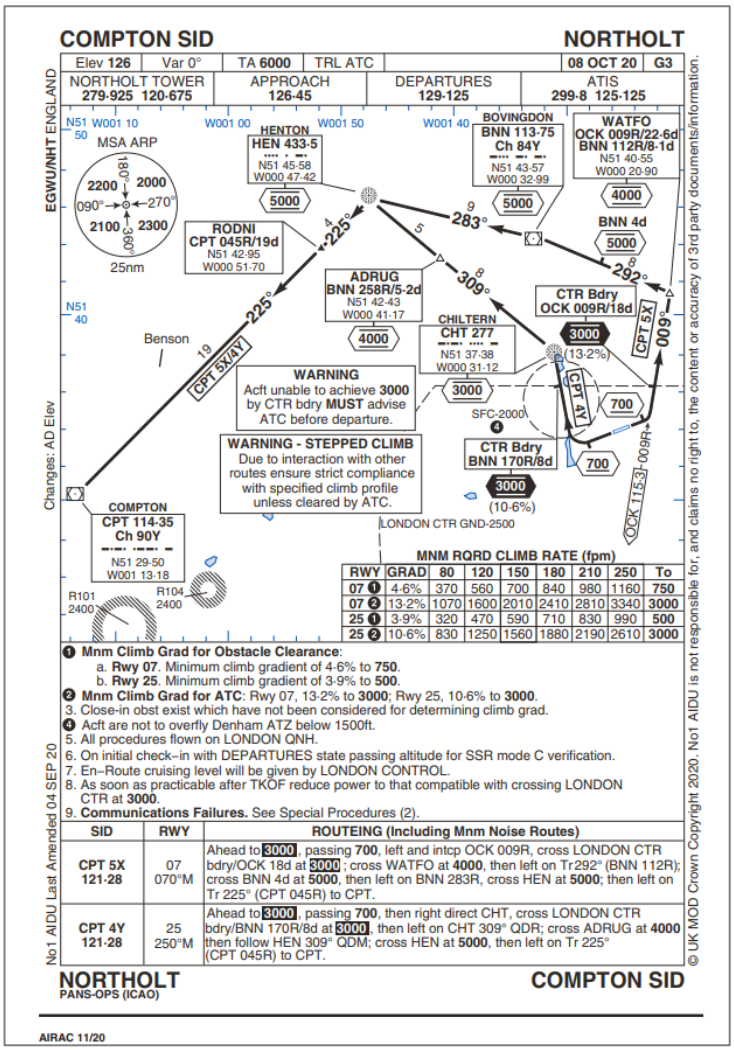


Figure 4

The C680 and PA46 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1]

Occurrence Investigation

NATS

The PA46 pilot had been in receipt of a radar service from the Thames Radar controller. The pilot requested to leave controlled airspace by descent, to fly under the London TMA inbound to their destination. At 1118:12 (all times UTC) the Thames Radar controller cleared the pilot to leave controlled airspace by descent. The Thames Radar controller offered the pilot of Traffic Service outside controlled airspace, however the pilot responded with “Basic Service outside controlled airspace”. The pilot requested to close the flight plan, and to cancel IFR, which was acknowledged by the controller.

At 1118:58 the pilot was instructed to squawk 7000 and to remain outside controlled airspace. The Thames Radar controller confirmed with the pilot at 1119:28 that they were in receipt of a Basic Service, and the pilot elected to remain on the Thames Radar frequency.

A C680 departed from Northolt under a radar service from Northolt Approach. The aircraft climbed within the London CTR and into the London TMA. However, the aircraft was positioned in proximity to the PA46 (Figure 5).

[1] SERA.3205 Proximity.

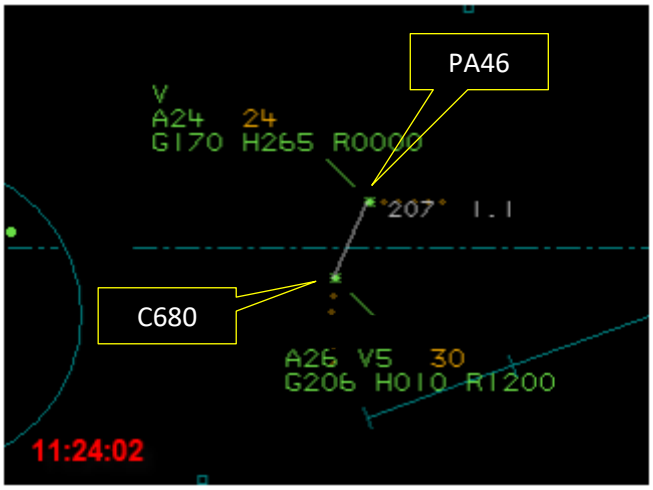


Figure 5

At the point of minimum lateral separation, there was 500ft vertical separation between the aircraft (Figure 6).

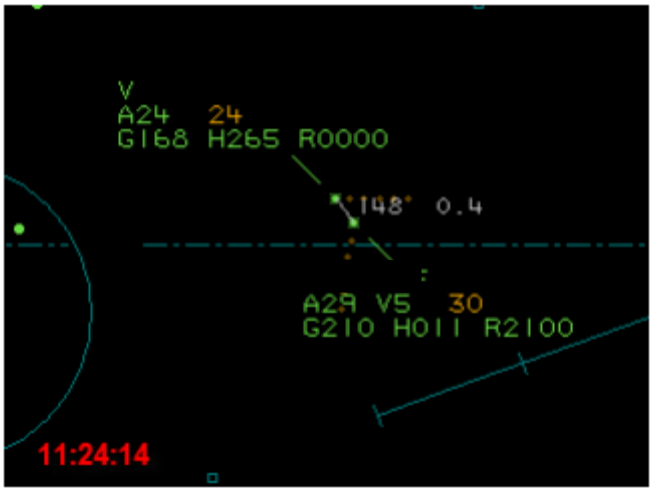


Figure 6

With one aircraft inside controlled airspace and one aircraft outside controlled airspace there were no separation requirements between the two aircraft. There was a noticeable increase in the rate of climb of the C680 between 11:24:02 and 11:24:14, although prior to this increased rate of climb it was already above the PA46, and therefore it was deemed that there was no critical manoeuvre made to avoid a collision.

The PA46 was operating under a Basic Service outside controlled airspace, whilst the C680 was inside the London TMA. As such there were no separation requirements.

Summary

An Airprox was reported when a C680 and a PA46 flew into proximity in the vicinity of Northolt at 1124Z on Friday 31st July 2020. The C680 pilot was operating under IFR in VMC and in receipt of the Radar Control Service from Swanwick(Mil). The PA46 pilot was operating under VFR in VMC and in receipt of a Basic Service from Thames Radar.

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.

The Board first looked at the actions of the C680 pilot. They were flying the Compton SID from RAF Northolt, which stipulated that they were to be at the CTR boundary at 3000ft. However, in the event, their climb was such that they were passing 2700ft at the boundary (**CF1, CF2**). Whilst this level kept them within controlled airspace, it did not give a 500ft buffer between the C680 and the PA46 outside controlled airspace. Although the pilot was passed Traffic Information on the PA46 operating outside controlled airspace, members thought that they probably hadn't assimilated that the traffic was within the parameters of that likely to alert the TCAS (**CF3**), so as the C680 came into proximity with the PA46, although separated procedurally, the TCAS alerted with an RA (**CF4**). Although the C680 pilot perceived that the PA46 'crossed through their flightpath' in fact it was below the C680 as they approached the CTR boundary (**CF6**).

Turning to the actions of the PA46 pilot, they had descended out of controlled airspace in order to transit to their destination. They levelled off at 2400ft, 100ft below the base of controlled airspace above them. Although they were entitled to do so, some members opined that the latest CAA guidance was to 'take 2' against controlled airspace, i.e. to remain 2NM or 200ft outside it, and that if the pilot had done so, the Airprox may have been avoided. Nevertheless, the PA46 pilot was visual with the C680 throughout, and received a TAS alert (**CF5**) and, knowing it was above their aircraft, was not concerned by the encounter.

In looking at the role that ATC had to play, members briefly discussed whether the Northolt controller should have reminded the pilot to be at 3000ft by the CTR boundary as per the SID. However, it was noted that the published procedure clearly stated the need to arrange the flight to cross the boundary at 3000ft and so it should not have been necessary to do so. Controlling members noted that the area was notoriously congested airspace with departures/arrivals from Luton and Stansted, as well as Heathrow and Northolt traffic and that there was not much room for controllers to manoeuvre aircraft, which was why it was so important that pilots flew in accordance with the procedures. The nature of Northolt departures meant that pilots needed to talk to the Northolt Departures controller prior to being transferred to a London controller, which in turn meant that there was normally an enforced stop-off at 3000ft, because the congested airspace seldom allowed for a continuous climb. Those with Thames Radar experience noted that the profile flown by the PA46 was a common one, but that because aircraft were normally at 3000ft by the edge of the CTR, it was not usually a problem.

Finally, in assessing the risk the Board quickly agreed that there had been no risk of collision, but briefly debated whether safety had been degraded, before determining that, whilst the parameters for reporting an Airprox had been met, normal safety standards had pertained; Risk Category E.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020084		
CF	**Factor**	**Description**	**Amplification**
	Flight Elements		
	• Regulations, Processes, Procedures and Compliance		
1	Human Factors	• Flight Crew ATM Procedure Deviation	
	• Tactical Planning and Execution		
2	Human Factors	• Action Performed Incorrectly	Incorrect or ineffective execution
	• Situational Awareness of the Conflicting Aircraft and Action		
3	Human Factors	• Understanding/Comprehension	Pilot did not assimilate conflict information

	• **Electronic Warning System Operation and Compliance**		
4	Contextual	• ACAS/TCAS RA	
5	Contextual	• Other warning system operation	Warning from a system other than TCAS
	• **See and Avoid**		
6	Human Factors	• Perception of Visual Information	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: E.

Safety Barrier Assessment[2]

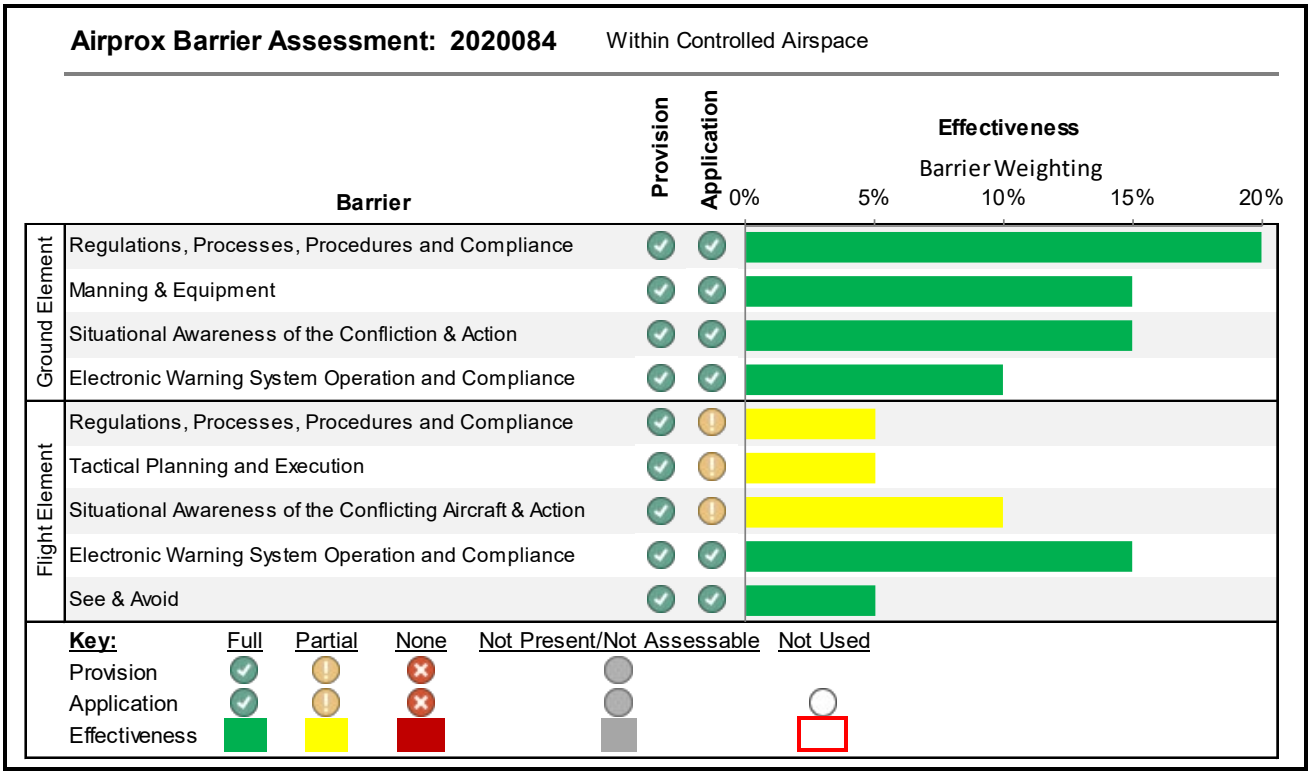
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the C680 did not follow the climb profile of the SID.

Tactical Planning and Execution was assessed as **partially effective** because the C680 was not at 3000ft by the CTR boundary.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the C680 pilot did not assimilate that the PA46 would be detected by the TCAS and cause an RA.



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