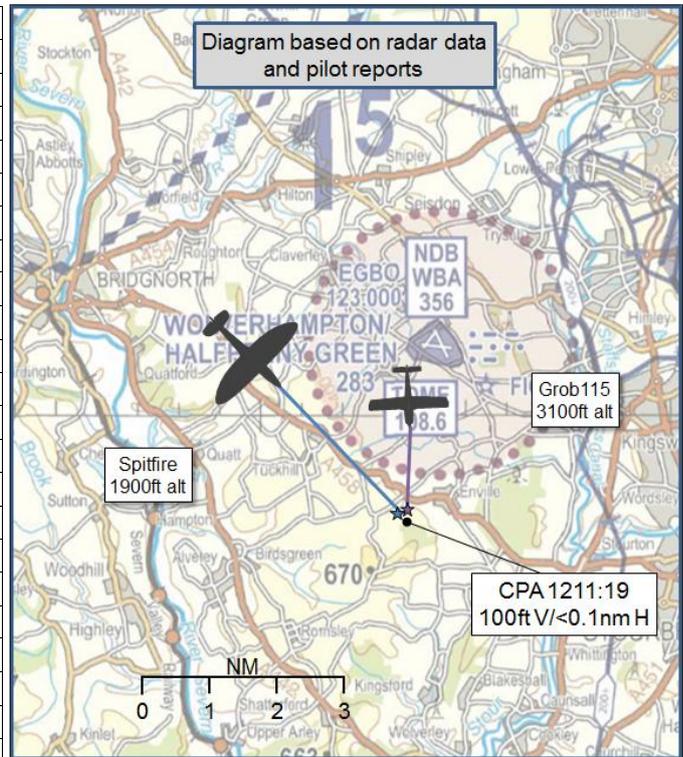


**AIRPROX REPORT No 2016108**

Date: 19 Jun 2016 Time: 1211Z Position: 5228N 00216W Location: IVO Wolverhampton

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	Spitfire	Grob 115
Operator	HQ Air (Ops)	Civ Trg
Airspace	Lon FIR	Lon FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Birmingham	Halfpenny Green
Altitude/FL	1900ft	1800ft
Transponder	A, C, S	A, C, S
<b>Reported</b>		
Colours		White
Lighting	NK	Nav, Beacon
Conditions	VMC	VMC
Visibility	20km	>10km
Altitude/FL	1700ft	2000ft
Altimeter	QNH (1023hPa)	NK
Heading	125°	190°
Speed	160kt	90kt
ACAS/TAS	Not fitted	Not fitted
<b>Separation</b>		
Reported	100ft V/200m H	4-5nm H
Recorded	100ft V/<0.1nm H	



**THE SPITFIRE PILOT** reports that he was leading a formation, with a Hurricane as his wingman. He had just been looking inside the cockpit to check and adjust the engine and looked out to see a white, light-aircraft slightly above and directly ahead passing left-to-right. This was accompanied by a simultaneous warning from his wingman over the RT. He took avoiding action to pass below and behind. He noted that if he had not taken avoiding action the aircraft would not have collided, but would have been very close indeed. Immediately prior to the Airprox, he had called Halfpenny Green to ask them about local traffic; they had informed him about traffic that had left their circuit, but he had not been able to ascertain the whereabouts of that traffic. At the time, he was under a Traffic Service with Birmingham, and reported the Airprox to them.

He assessed the risk of collision as 'High'.

**THE GROB 115 PILOT** reports that the incident took place several weeks before he wrote his report, which was therefore written to the best of his recollection. He departed Halfpenny Green on an introduction to navigation training flight, initially climbing in the overhead to 2000ft, circling in the overhead before setting course. He was aware of an aircraft passing to the west of the airfield, he couldn't recall the exact conversation with ATC, but the student remembered the other pilot requesting Traffic Information and being told about their aircraft departing the airfield before reporting that he would be remaining 5nm west he recalled. He was not informed about the Airprox at the time, and he didn't see the other aircraft at any point. He believed that they remained within the ATZ whilst circling in the overhead; with the other aircraft 5nm away, he therefore questioned whether the two aircraft were ever in proximity.

He assessed the risk of collision as 'None'.

**THE BIRMINGHAM CONTROLLER** reports that the Spitfire pilot made contact with Birmingham at 1210 and requested a Traffic Service. He was given a squawk, and then the controller continued to control other aircraft on frequency. Before any type of radar service was agreed, or the aircraft was identified, the Spitfire pilot declared an Airprox, at which point the controller identified the aircraft, confirmed that a Traffic Service was now being provided, and gave traffic Information on two other aircraft.

## Factual Background

The weather at Birmingham was recorded as follows:

EGBB 191150Z 18008KT 160V220 9999 SCT023 BKN039 17/13 Q1021=

## Analysis and Investigation

### CAA ATSI

The Spitfire (SSR code 7000/0401) was operating VFR in formation with a Hawker Hurricane in transit to Coventry Airport following an air display at RAF Cosford. At the time of the Airprox, the Spitfire had just called Birmingham Radar. Although the Spitfire pilot had requested a Traffic Service, at the time the Airprox occurred he had not yet been identified by the Birmingham Radar controller and no ATC service had been agreed.

The Grob 115 (SSR code 7000) was operating on a navigation training flight under VFR. The Grob 115 pilot reported that they climbed to 2000ft in the overhead of Halfpenny Green prior to setting course to the south-west, and that they were in receipt of a Basic Service from Halfpenny Green Information.

The Spitfire pilot made his initial call to Birmingham Radar at 1210:06 (Figure 1), at this time he was 2.7nm to the west of Halfpenny Green and was indicating altitude 1800ft. Coincident to this, the Grob115 was 1.5nm to the south-south-west of Halfpenny Green and was indicating altitude 1900ft. The horizontal distance between the two aircraft at this time was 2.6nm.

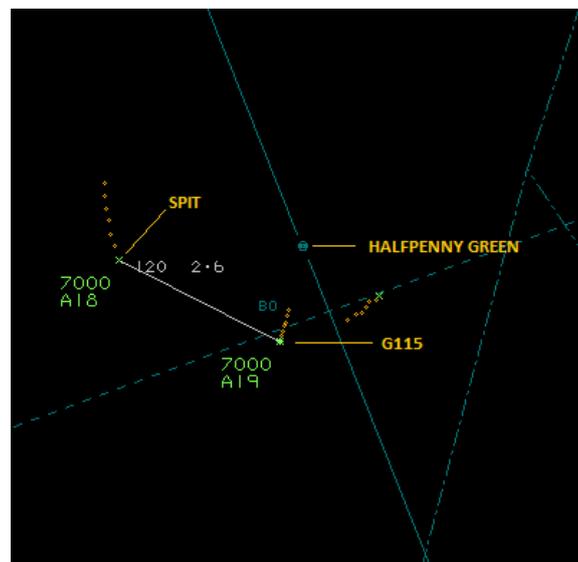


Figure 1 – Swanwick MRT at 1210:06 UTC

The Spitfire pilot advised the Birmingham Radar controller that the formation were west abeam of Wolverhampton and that they intended to route to the south of Birmingham Airport inbound to Coventry. After ascertaining that the Spitfire required a Traffic Service, the Birmingham Radar controller instructed the Spitfire to squawk 0401 with ident at 1210:36 (Figure 2). The transponder code on the Spitfire changed to the Birmingham Radar squawk at 1210:51 (Figure 3).

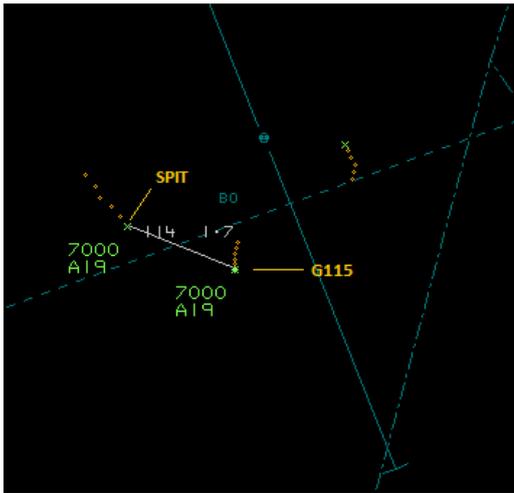


Figure 2 – Swanwick MRT at 1210:36

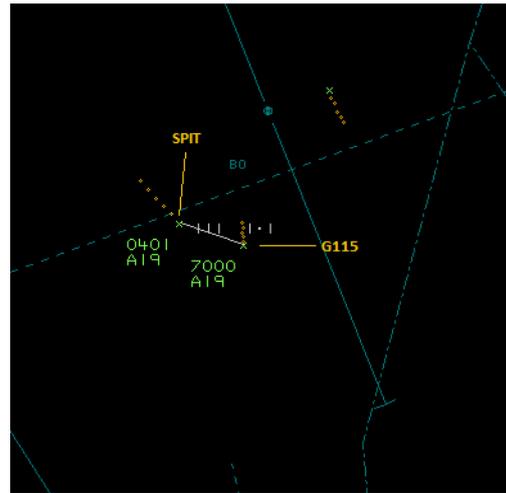


Figure 3 – Swanwick MRT at 1210:51

CPA occurred between 1211:19 (Figure 4) and 1211:23 (Figure 5) with a horizontal distance of less than 0.1nm and a vertical distance of 100ft.

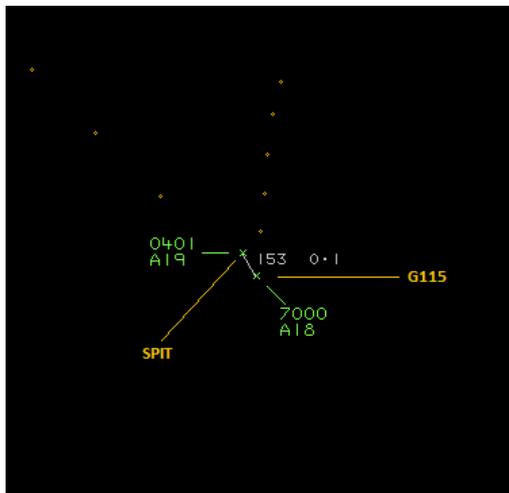


Figure 4 – Swanwick MRT at 1211:19

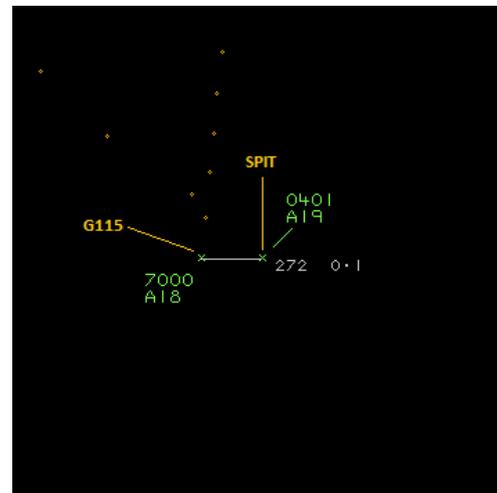


Figure 5 – Swanwick MRT at 1211:23

The Birmingham Radar controller identified the Spitfire at 1211:32, and placed the aircraft under a Traffic Service, this was after CPA had occurred, and after the Spitfire pilot had reported the Airprox to Birmingham on the R/T. When the pilot reported the Airprox, he described the conflicting traffic as being north-westbound. At the time of the Airprox the Grob115 was south-south-westbound.

Although Halfpenny Green routinely record their R/T, on this occasion their recorder was unserviceable. The Spitfire pilot's report states that he had called Halfpenny Green prior to the Airprox in order to obtain Traffic Information on any local flying traffic. According to the Grob115 pilot's written report, Traffic Information was passed to the Spitfire prior to the Airprox by the Halfpenny Green FISO. Halfpenny Green were contacted by ATSI for information but the FISO could not recall any relevant details pertaining to the Airprox.

At the time of the Airprox the Halfpenny Green FISO was providing a Basic Service to the Grob115 outside of the Halfpenny Green ATZ within Class G (uncontrolled) airspace. The Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs.<sup>1</sup>

<sup>1</sup> CAP 774 – Chapter 2-1

## UKAB Secretariat

The Spitfire and Grob115 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard. If the incident geometry is considered as converging then the Grob115 pilot was required to give way to the Spitfire<sup>2</sup>.

## Comments

### HQ Air Command

This incident took place following a planned display at Cosford. The Spitfire pilot – and formation leader – has significant experience operating in an environment where GA activity can be expected to be high, and consequently had planned to contact Halfpenny Green on completion of the display, as well as seeking a Traffic Service from a nearby radar unit. It is unfortunate that the Airprox occurred during the process of agreeing a Service with Birmingham – both aircraft were squawking but the formation had not yet been identified so accurate Traffic Information could not realistically have been issued. The information received from the FISO at Halfpenny Green was not of sufficient granularity to aid the Spitfire pilot's visual acquisition of the Grob. The Spitfire is fitted with P-FLARM and it would normally be expected that the Grob (which was squawking) would have been visible on that equipment – it is unclear as to why the Grob did not appear on the Spitfire's P-FLARM display.

The weather conditions were favourable for visual acquisition of other air systems – no sun/glare due to overcast conditions and good visibility below could. However, the small size and colour of the Grob means that it would be difficult to see even in the most favourable of conditions. Ultimately, the Grob was seen by the pilot of the subordinate element in the formation and announced to the leader at the same time as the Spitfire pilot visually acquired the Grob, once again showing the importance of maintaining a disciplined lookout scan.

## Summary

An Airprox was reported when a Spitfire and a Grob115 flew into proximity at 1211 on Sunday 19<sup>th</sup> June 2016. Both pilots were operating under VFR in VMC, the Spitfire pilot in receipt of a Traffic Service from Birmingham and the Grob115 pilot in receipt of a Basic Service from Halfpenny Green.

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

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings and reports from the appropriate ATC and operating authorities.

The Board first looked at the actions of the Spitfire pilot. He had called Halfpenny Green to inform them that he was flying close by and ask for Traffic Information; unfortunately, although they had given him generic information on aircraft departing, it appeared that they had been unable to give sufficiently precise positioning information to enable the Spitfire pilot to see the Grob. Members noted that he had also requested a Traffic Service from Birmingham, and that it was again simply unfortunate that the Airprox had occurred as the controller was in the process of identifying him. The Board noted that his aircraft was fitted with P-FLARM (transponder compatible), and they wondered why it hadn't given indications on the Grob, who was squawking. The Board were informed that P-FLARM works by picking up the signal that a transponder gives out when it has been interrogated by a third-party radar, not by interrogating the transponder itself. Nevertheless, in that area of the country there are plenty of radars within range, and indeed the NATS radars showed the Grob's squawk on the radar replay used for the investigation. RAF members reported that the P-FLARM had been tested after landing and was confirmed to be working correctly. The Board could therefore not come to any opinion as to why the Spitfire's P-FLARM did not give the pilot any indication of the

<sup>2</sup> SERA.3210 Right-of-way (c)(2) Converging.

conflicting traffic, and could only conclude that it must have been due to some sort of aerial blanking. Overall, the Board commended the Spitfire pilot for doing everything within his power to increase his situational awareness; his last line of defence had been his and his No 2's look-out and, although late, they noted that he had visually acquired the conflicting traffic in the end.

For his part, it seemed that the Grob pilot had heard the Spitfire pilot call on Halfpenny Green's frequency but, on hearing the Spitfire pilot report that he was 5 miles away, appeared to assimilate that the Spitfire would be remaining at that distance and would not be a factor. As a result, the Grob pilot had continued to orbit in the overhead and then unknowingly set off on a collision course with the Spitfire. Although not germane to this particular Airprox, as a side-issue, GA members cautioned against orbiting in the overhead of an airfield prior to setting out on a Navex, citing safety reasons in that it was the place where joining traffic flew to and, as a known point of conflict, should therefore be avoided where possible. Given that this was an early navigation instructional sortie, the Board wondered whether the Grob student and instructor were task-focused on their Navex to the detriment of look-out. Given that they flew within 100ft and 0.1nm of a Spitfire and Hurricane and didn't see them, this was a salutary lesson on the importance of maintaining a robust look-out in Class G airspace at all times, where see-and-avoid is the main mitigation against mid-air collision.

The Board then looked at the part that ATC had to play in this Airprox; controlling members discussed whether Birmingham could have actively looked for the Spitfire on the radar as they allocated the squawk rather than attend to other aircraft. They could then perhaps have given Traffic Information using the phrase 'traffic believed to be you'. That said, it was not known how busy the Birmingham controller was at the time, or indeed if he had higher priorities to manage; in this respect, CAA ATSI confirmed that the controller was working other traffic at the same time. Controller members also thought that it had been unfortunate that Halfpenny Green AFISO was not able to help the Spitfire pilot with more detailed information on the departing Grob, but recognised that he too would have had other priorities to manage and, without a radar, would not have known the exact position of the Grob.

In determining the cause of the Airprox, the Board quickly agreed that this incident had taken place in Class G airspace where, in the absence of ATC Traffic Information or reliable electronic conspicuity warnings, look-out was paramount as the primary safety barrier to mid-air collisions. Therefore, the Board determined that the cause of the incident had been a late sighting by the Spitfire pilot and a non-sighting by the Grob pilot. Turning to the risk, given that the Spitfire pilot had managed to take avoiding action, albeit late, the risk was assessed as Category B, safety had been much reduced below the norm.

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

Cause: A late sighting by the Spitfire pilot and a non sighting by the Grob115 pilot.

Degree of Risk: B.