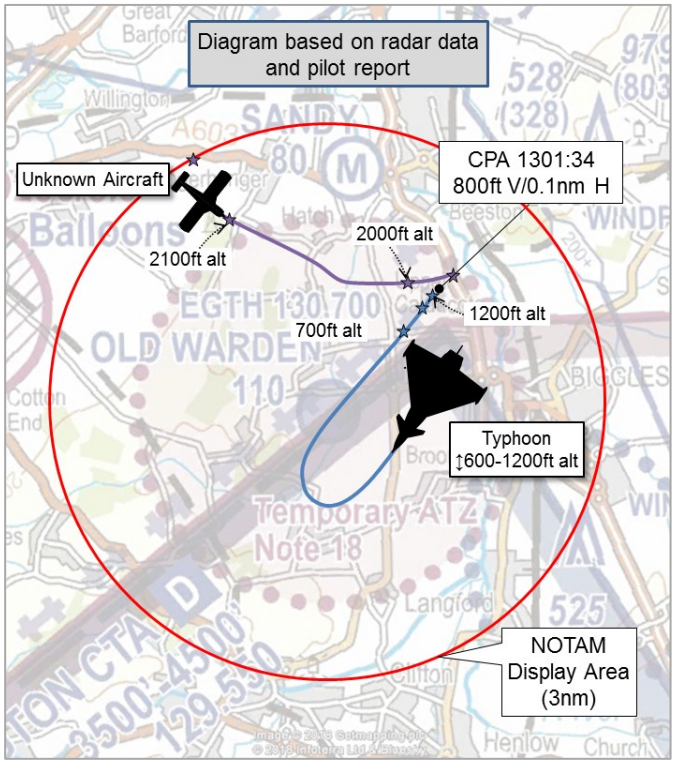
AIRPROX REPORT No 2018072

Date: 06 May 2018 Time: 1301Z Position: 5205N 00018W Location: Old Warden

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Typhoon	Unknown Aircraft
Operator	HQ Air (Ops)	Unknown
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	
Service	Basic	
Provider	Swanwick Mil	
Altitude/FL	1200ft agl	2000ft agl
Transponder	A, C, S	A, C
Reported		
Colours	Grey	
Lighting	HISL, Nav	
Conditions	VMC	
Visibility	10km	
Altitude/FL	Aerobatics	
Altimeter	QFE (1017hPa)	
Heading	Aerobatics	
Speed	Aerobatics	
ACAS/TAS	Not fitted	Unknown
Separation		
Reported	Not seen	NK
Recorded	800ft V/0.1nm H	



THE SWANWICK MIL CONTROLLER reports that he was the East TAC R controller at the time of the event. He had been pre-noted the Typhoon for Shuttleworth Air Display. Upon making initial contact with the Typhoon, the pilot confirmed that he wished to remain on the Swanwick frequency as opposed to Luton Radar and that he was looking for descent to complete his display at 1300Z for 8mins. After issuing the Chatham RPS 1017, he cleared the Typhoon to 3000ft to remain below CAS. After holding NE of Shuttleworth for 2-3mins, the Typhoon requested no more Traffic Information while he conducted his display. The controller placed him under a Basic Service and requested the pilot re-contact him upon completion of the display, which the pilot acknowledged. At 1304, an aircraft Squawking 7000 came within an estimated 0.5nm/400ft of the Typhoon: he attempted to call the Typhoon pilot two or three times until the unknown aircraft turned away from the display area. Upon completion of his display the Typhoon pilot re-contacted him for RTB.

He perceived the severity of the incident as 'Medium'.

THE TYPHOON PILOT reports being the first aircraft to display at the 'Shuttleworth RAF100 Airshow'. The display went as planned and, after landing, he was informed by a telephone conversation with the Swanwick Mil controller that the controller was going to file an Airprox against a light-aircraft that had been close to his aircraft during his display. He did not see the 'interloper' and was only aware of the Airprox from the telephone conversation. He did not hear any traffic information during the display and has checked his tape to confirm that the information was not received. He had the Swanwick Mil volume up on the R/T at all times and so this is probably due to aircraft internal warnings masking it or poor comms associated with the low-level environment. Also from the tape, at no point during the display did he stray more than 2.4nm from the centre of the 3nm radius of the NOTAM warning of the flying display at Shuttleworth; therefore, the interloper must have been inside the NOTAM.

He perceived the severity of the incident as 'Medium'.

THE UNKNOWN AIRCRAFT PILOT could not be traced.

Factual Background

The weather at Luton was recorded as follows:

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METAR EGGW 061250Z AUTO 11007KT 080V140 9999 NCD 22/09 Q1022
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The display NOTAM was as below:

Analysis and Investigation

Military ATM

The Typhoon was initially receiving a Traffic Service (TS) from Swanwick (Mil) East and, in the minutes leading up to the Airprox, Traffic Information (TI) was passed in accordance with CAP774. Approximately 4 mins before the Airprox, the Typhoon pilot requested no more updates due to the impending display and the ATS was downgraded to a Basic Service at that time. Notwithstanding, approximately 1min prior to the Airprox, the Swanwick (Mil) TAC East controller passed TI on the unknown aircraft at 1½nm and ½nm. No response was received from the Typhoon pilot who later reported not hearing the TI nor seeing the unknown aircraft.

Figure 1, timed at 1258:11, corresponds to the time that the Typhoon (Sqk 4643) was placed under a Basic Service. The unknown aircraft (Sqk 7000) is operating to the west of the Typhoon.

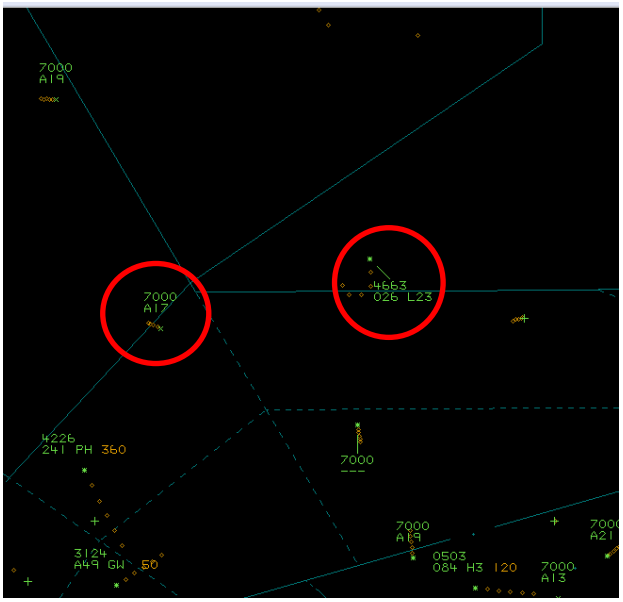


Figure 1 timed at 1258:11

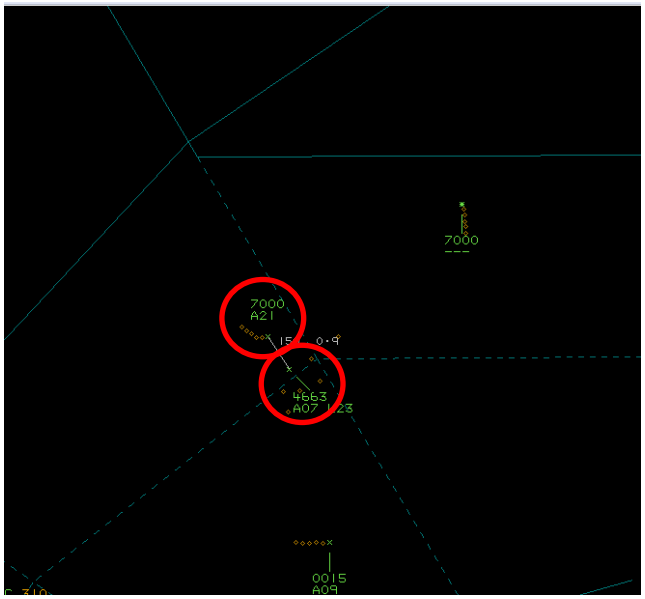


Figure 2 timed at 1301:36

Figure 2, timed at 1301:36, is coincident with TI being passed for the first time. The TI states the unknown aircraft as "Traffic north of Shuttleworth by one and a half mile, two thousand feet, tracking north easterly".

Figure 3, timed at 1302:37, is coincident with TI being passed for a second and final time. The TI states the unknown aircraft as "North, half a mile, two thousand feet tracking east".

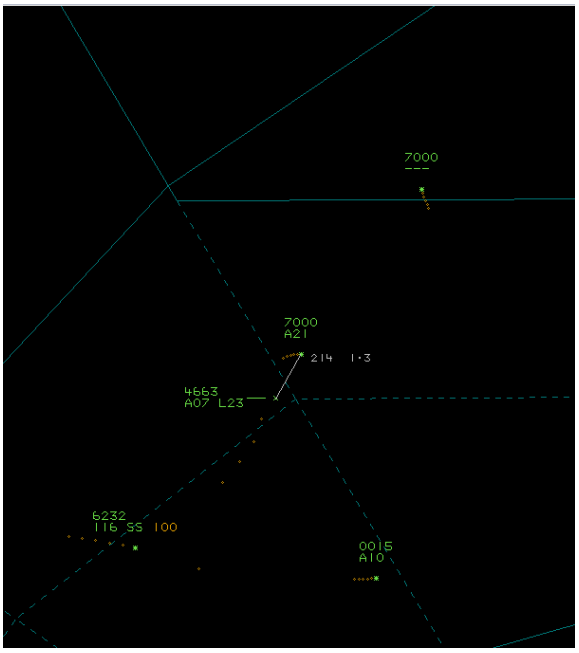


Figure 3 timed at 1302:37

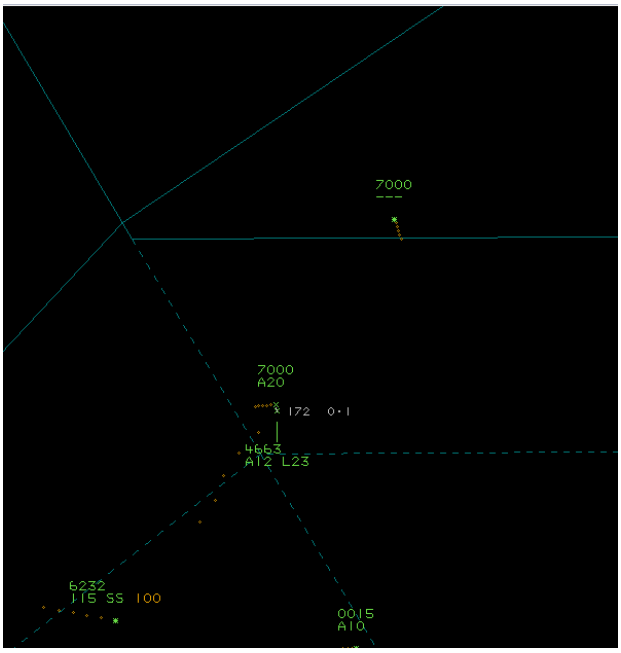


Figure 4 timed at 1302:44, showing CPA.

Figure 4, timed at 1302:44, shows the CPA between the aircraft as 0.1nm and 800ft indicated on Mode C.

Swanwick (Mil) sectorises UK airspace and assigns frequencies to each sector. In this instance, Old Warden (Shuttleworth) airfield lies within South East airspace and has different frequencies associated with it. The TAC East controller offered to handover the Typhoon to Luton Radar who may have been better placed to control the aircraft. This offer was declined by the Typhoon and the Swanwick investigation recommended that, in future, this should not be an offer; the aircraft should be handed to the agency best placed to provide a service.

Advice was sought from NATS Service Manager at Swanwick who recommended that the East frequency being used by the TAC East Controller should not be used below 15,000ft at Old Warden. It is therefore unsurprising that the TI passed by the TAC East controller was not received by the Typhoon.

This Airprox occurred in Class G airspace between a Typhoon receiving a BS and an unknown aircraft. The Swanwick (Mil) TAC East controller attempted to discharge their responsibilities as part of the Basic Service but, due to inappropriate frequency selection, the TI was ineffective. Therefore, the provision of an ATS was not an effective barrier in this incident.

UKAB Secretariat

The Typhoon 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[1]. An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation[2].

[1] SERA.3205 Proximity.
[2] SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Comments

HQ Air Command

The Typhoon pilot had justifiably downgraded his Air Traffic Service to a Basic Service in the knowledge that the controller would still likely pass TI on aircraft that posed a definite threat to his aircraft whilst he executed his display. This was a sensible course of action given the concentration required to execute the display sequence; however, choosing to remain on a frequency that is not designed to have coverage at the lower levels where he was operating was less than ideal; the ATS unit's investigation found that the frequency in use was recommended not to be used below 15,000ft in the vicinity of Old Warden.

Other MAC barriers were unavailable because the Typhoon is not yet fitted with an ACAS (it is not known if the unidentified light aircraft was fitted with an ACAS) and the Typhoon pilot's lookout would have been highly compromised while he conducted his display.

The major lessons from this Airprox are: 1. That it should never be assumed that a warning NOTAM for an air display will provide a 'sterile' zone; indeed, there have been occasions where a RA(T) has been penetrated by an unauthorised aircraft; and, 2. Radio frequencies do not always deliver complete coverage at all levels. On this latter point, the unit investigation recommended that, in future, pilots should be instructed to change to a more appropriate frequency.

Summary

An Airprox was reported when a Typhoon and an unknown aircraft flew into proximity at 1301hrs on Sunday 6th May 2018 whilst the Typhoon was conducting a display at Old Warden. The Typhoon pilot was operating under VFR in VMC and in receipt of a Basic Service from Swanwick. The unknown aircraft's pilot could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilot of the Typhoon aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board first began by looking at the actions of the Typhoon pilot. The military member briefed the Board on his actions and commented that it was normal practice for military pilots carrying out displays to downgrade to a Basic Service because this minimises the amount of TI they receive whilst carrying out the high workload manoeuvres. He commented that the Typhoon pilot had elected to remain with Swanwick (Mil) rather than talk to Luton because military pilots believe they will receive additional relevant TI even under a Basic Service due to the enhanced understanding of military operations by military controllers. The NATS representative confirmed that the Luton controller would probably not have been able to pass TI to the Typhoon pilot under a Basic Service given that, at that time of day, arriving and departing aircraft would be prioritised under their higher level of service. Notwithstanding, members noted that the Typhoon pilot was fully aware of the provisions of his Basic Service, although some wondered whether he felt he might be gaining a degree of protection under the published NOTAM that was not necessarily the case. Although he had asked not to receive further traffic information, members noted that, had the Typhoon pilot been allocated a more suitable low-level frequency, he might have received valuable situational awareness on a potential threat.

The Board then turned to the actions of the Swanwick (Mil) controller. The military air traffic member reported that, although specific radio frequency height restrictions were not published in the ATM documents for Swanwick, it was widely understood that the very minimum that Swanwick (Mil) could operate down to was 3000ft. He went on to say that the controller should have been aware of this frequency limitation, and that controllers have now been re-briefed to instruct pilots to change frequency if operating at lower levels thereby giving the pilot the option to request a frequency that will provide

better reception. Notwithstanding, members noted that the controller appropriately endeavoured to pass traffic information as 'Duty of Care' even though the Typhoon pilot was under only a Basic Service.

Members were disappointed that the unknown aircraft could not be traced, noting that, unfortunately, it had faded from radar shortly after leaving the NOTAM'd area. Although the Board agreed that the NOTAM was for information only, it was clearly available prior to the display and the unknown aircraft pilot should have used this information to ensure he was aware of the activity prior to getting airborne. The Board also agreed that the unknown aircraft pilot would have been better served by communicating with either Old Warden or Luton prior to entering the NOTAM'd area so that they had the opportunity to receive updated information on the flying display. Some members wondered whether the unknown light-aircraft pilot had not only flown through the NOTAM but had also penetrated the Old Warden temporary ATZ. However, although the unknown aircraft Mode C readout indicated 2000ft altitude at CPA, and Old Warden being 110ft amsl, transponder tolerances were such that it could not be definitively determined that the ATZ had been penetrated if active. Notwithstanding, GA members opined that the unknown light aircraft pilot had been ill-advised to have flown overhead Old Warden at the top of the ATZ given that other aircraft might well be joining, operating within or departing at that altitude.

The Board then looked at the actions of Old Warden. They noted that the Typhoon display had been a late entry into their Airshow[3] programme and that Old Warden had applied for a RA(T) on Thursday 26th April 2018 for the Airshow on Sunday the 6th May 2018: this gave only 6 working days from application to display. The Board were informed that CAP 403 requires 90 days minimum for the processing of a RA(T) application in order to complete the legal processes involved (this includes a minimum of one week for DfT to approve the application); as a result, the CAA had not approved the request. Some members wondered why the RA(T) application process was so protracted: 90 days appeared to be excessive, but it was not known what specific actions had to be conducted in order to process a request or whether all of these processes were fundamentally required for Class G airspace. Nonetheless, members noted that Old Warden had at least NOTAM'd the event and, whilst not prohibiting pilots flying in the NOTAM'd area, this did at least provide pilots with sufficient information to plan their route accordingly and ensure that their track did not endanger the safe flight of themselves or the displaying pilots.

Timeline

G1 As detailed in Chapter 3, a number of critical deadlines need to be met in the planning for a Flying Display or Special Event. These are summarised below:

Type of Event	Airspace Regulation (For RA(T) action) AROps@caa.co.uk	Air Traffic Action (CAA ATS Regional Office) Form: SRG 1417	Aerodrome Licensing Action (ASD) Form:SRG 2003	Airspace Regulation (For deconfliction) AROps@caa.co.uk	CAA GA Unit Action Form:here
Flying Displays and Special Events	90 Days	90 Days	60 Days	42 Days	42 Days
Balloon Events	90 Days	90 Days		42 Days	
Parachuting	90 Days	90 Days		28 Days	
Microlight Events (Non–display)	90 Days	90 Days		42 Days	42 Days*
Helicopter Events (Non–display)	90 Days	90 Days	60 Days	42 Days	42 Days*
Air Races and Rallies	90 Days	90 Days	60 Days	42 Days	42 Days*

*A minimum of 42 days notice is required for any Permission or Exemption from the Standardised European Rules of the Air.

Figure 5: CAP 403 - Timeline for Applications

The Board then looked at the cause of the Airprox and quickly agreed that the unknown aircraft should have known about the flying display through the NOTAM and his presumed pre-briefing. As a result, members assessed that the pilot of the unknown aircraft had flown into conflict with the Typhoon, with a contributory factor that the pilot of the unknown aircraft had flown into a NOTAM'd area. Turning to the risk, the Board agreed that although the recorded separation was 800ft vertically, with a highly dynamically manoeuvring Typhoon, this separation had largely been a result of serendipity given that

[3] AIC Y 004/2018. Old Warden Aerodrome and Special Events 2018. Date of Publication 15 February 2018.

even if the unknown light-aircraft pilot had seen the Typhoon, he would likely not have been able to manoeuvre to avoid it had the Typhoon pilot tracked towards him at high speed as part of the display. As a result, the Board agreed that safety had been much reduced below the norm and, accordingly, they assessed the risk as Category B.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The pilot of the unknown aircraft flew into conflict with the Typhoon.

Contributory Factor(s): The pilot of the unknown aircraft flew into a NOTAM'd area.

Degree of Risk: B.

Safety Barrier Assessment[4]

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

ANSP:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because Old Warden did not apply for a RA(T) in sufficient time for the application to be processed[5].

Manning and Equipment were assessed as **partially available** because radio coverage prevented the Swanwick controller from passing TI to the low-level Typhoon pilot.

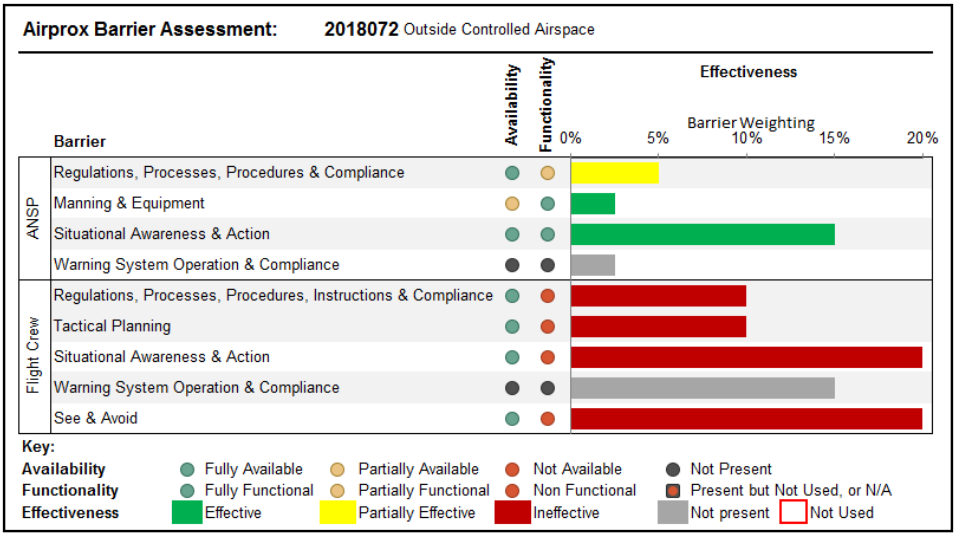
Flight Crew:

Regulations, Processes, Procedures, Instructions and Compliance were assessed as **ineffective** because the unknown aircraft pilot entered the NOTAM'd area without communicating with the controlling agency.

Tactical Planning was assessed as **ineffective** because the unknown aircraft pilot evidently did not adequately plan his route to avoid the NOTAM'd display area.

Situational Awareness and Action were assessed as **ineffective** because the Typhoon pilot could not receive the available TI from Swanwick due to his display altitude.

See and Avoid were assessed as **ineffective** because the Typhoon pilot did not see the unknown aircraft. It is not known if the unknown aircraft pilot saw the Typhoon.



[4] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.
[5] CAP403. 90 days prior to the event.