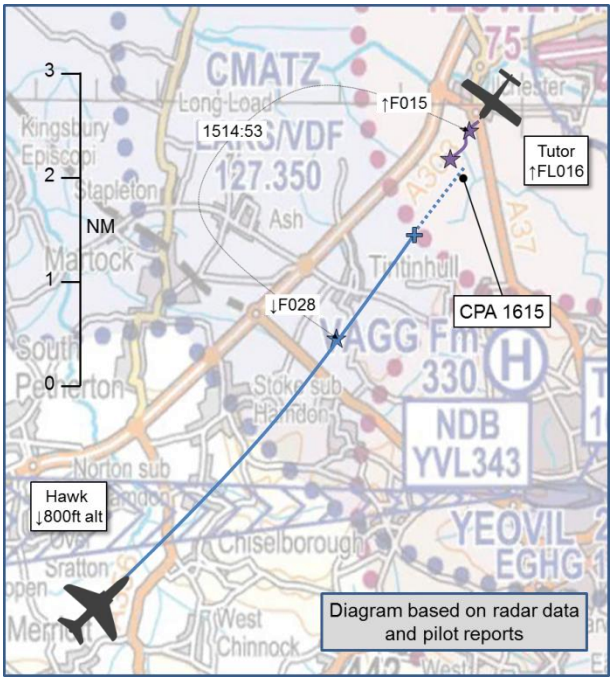
AIRPROX REPORT No 2014124

Date/Time: 29 Jul 2014 1515Z

Position: 5059N 00241W (1nm SW Yeovilton)

Airspace: VLN ATZ (*Class*: G)

	Aircraft 1	*Aircraft 2*
Type:	Hawk	Tutor
Operator:	RN	RN
Alt/FL:	1400ft QFE (1014hPa)	1500ft QFE (1014hPa)
Conditions:	VMC	VMC
Visibility:	30K	20K
Reported Separation:	0ft V/300ft H	0ft V/200-300ft H
Recorded Separation:	N/K	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK PILOT reports flying a black aircraft with all lights illuminated and transponder mode 3A, C and S selected. ATC had requested that the pilot fly a radar practice forced landing (RPFL) for controller training. The profile was flown from the south west from 17,000ft. On passing 10,000ft, the pilot heard a call from an aircraft departing to the south east: soon afterwards he was restricted to "not below 2000ft" in accordance with local orders. Passing 5000ft, he was cleared for the full profile down to 800ft QFE. As he was at approximately 1400ft, a Grob was seen in the 10 o'clock position at the same level, with a lateral displacement of 300ft.

He assessed the risk of collision as 'High'.

THE TUTOR PILOT reports flying a white aircraft with strobes and nav lights illuminated, the transponder selected with Mode 3A, C and S, and the aircraft fitted with a TAS. He reported that on initial climb-out he was heading south-west in good weather conditions but it was not possible to make contact with the Approach controller for a Traffic Service due to the frequency being very busy. When passing 1500ft, it became apparent that there was an aircraft receiving radar vectors and a RPFL procedure. A traffic advisory contact appeared at 2 miles on the TAS, just left of 12 o'clock and descending rapidly through +300. Aware of the known inaccuracy in the Tutor TAS in azimuth, a straight climb was maintained but with a weave in an attempt to become visual. A few seconds later the Hawk was spotted passing 200-300ft left, slightly low and in the opposite direction. Contact was finally made with the Approach controller to establish a service and confirm the Hawk sighting.

He assessed the risk of collision as 'High'.

THE YEOVILTON ADC reports that he was the ADC OJTI with a medium intensity workload, when they received a call from the Approach controller advising that a Hawk was joining for a RPFL from the south. The Hawk was restricted to 2000ft due to two Tutors about to depart. A further call requesting a joining clearance was received when the Hawk was passing 9000ft. There was a slight delay in the response as the trainee and the OJTI discussed the request, however a clearance to join down to 800ft was given because the Tutors had departed and the circuit was now clear.

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

THE YEOVILTON DATCO reports that he was in the visual control room and did not witness the incident. The trainee ADC controller and the OJTI were busy during that period, with multiple aircraft recovering and the Tutor departures. He liaised with the Radar Supervisor to assign the RPFL a decent height, and 800ft was agreed because the visual circuit was clear now that the Tutors had departed and changed to the Approach frequency.

THE YEOVILTON APPROACH CONTROLLER reports that he was the APP OJTI during the Hawk's RPFL. The trainee had conducted all the required RPFL procedures whilst the Hawk approached Yeovilton to join the visual circuit to land. As the Hawk was accelerating, the radar supervisor was liaising with the ADC to obtain a clearance to join the visual circuit and a safe height to which it could descend. During this period the workload on the trainee was considerable, with a number of aircraft calling the Approach frequency whilst the trainee was passing ranges and bearings to the Hawk pilot. When the Hawk approached 5nm from Yeovilton, a clearance to join the visual circuit was issued as "clear to join, circuit clear, 800ft PFL approved". Whilst the trainee was passing this clearance to the Hawk pilot they both noticed a Tutor aircraft, not yet speaking on the Approach frequency, climbing out of Yeovilton and heading south west towards the Hawk. The traffic had not been called to the Hawk pilot, the Hawk pilot then told Approach that he was visual with the airfield and with a Tutor passing down his left hand side. He then went to the ADC frequency.

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

THE YEOVILTON ATC SUPERVISOR reports that whilst the Hawk recovered to Yeovilton on a RPFL he performed the liaison call to ADC, pre-noting them on its intentions. The trainee continued to pass ranges and bearings to the Hawk, and also indentified a Tutor as it departed to the south-east. As the Hawk reported accelerating he called ADC to obtain a clearance to join, the clearance was given along with the circuit state, however, no height was given. He questioned the height the Hawk was cleared to and 800ft was approved with the information that the circuit was clear. The clearance was passed to the Hawk and the pilot was asked to report visual with the airfield. The Hawk pilot reported that he was visual with the airfield and with a Tutor passing down his left-hand side. The Tutor then called on the Approach frequency and stated that he was visual with the Hawk.

Factual Background

The weather at Yeovilton was reported as:

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METAR EGDY 291550Z 31013KT 9999 FEW038 23/15 Q1016 BLU NOSIG
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Analysis and Investigation

Military ATM

At 1511:15, the Hawk was provided with a Traffic Service for a visual recovery. Following a request for a RPFL for controller training, the Hawk declared a practice pan at 1512:14 with a simulated fire caption, SW 17nm, requesting a RPFL. To sample the amount of RT exchange that occurred between the RPFL Hawk and the Approach controller, parts of the transcript are below:

TIME(LOCAL)	FROM	TO	NARRATIVE
15:12.58	APP	HAWK	[HAWK C/S] 040 15 ½ miles.
15:13.04	HAWK	APP	[HAWK C/S] accelerating.
15:13.06	APP	HAWK	[HAWK C/S] roger.
15:13.08	APP	HAWK	040 15 miles.
15:13.13	APP	HAWK	10…10000…5000 foot wind 340/10.
15:13.28	APP	HAWK	040/13.
15:13.38	APP	HAWK	040 12 ½.
15:13.47	APP	HAWK	040 11 ½.
15:14.01	APP	HAWK	040 9.
15:14.09	APP	HAWK	040 8.

15:14.20	APP	HAWK	040 7.
15:14.23	APP	HAWK	Practice Pan [HAWK C/S] clear to join circuit clear.
15:14.25	HAWK	APP	Passing 5000 feet.
15:14.27	APP	HAWK	Practice Pan [HAWK C/S] …clear to join circuit clear.
15:14.32	HAWK	APP	Clear to join the circuit [HAWK C/S]
15:14.38	HAWK	APP	……..low approach.
15:14.42	APP	HAWK	040 5 ½ .
15:14.43	APP	HAWK	Standby for height restriction.
15:14.45	APP	HAWK	[HAWK C/S] not below 2000 feet initially.
15:14.47	HAWK	APP	Not below 2000 feet [HAWK C/S]
15:14.49	APP	HAWK	[HAWK C/S] 800 feet now approved.
15:14.52	HAWK	APP	800 [HAWK C/S]
15:14.54	APP	HAWK	[HAWK C/S] report visual with the field.
15:15.10	HAWK	APP	[HAWK C/S] visual with the field and the Grob that's just went down my left hand side to TWR.
15:15.17	APP	HAWK	[HAWK C/S] roger channel 1.
15:15.28	TUTOR	APP	APP [Tutor c/s] passing 2000 feet and VFR to the south west requesting Traffic Service I was also visual with the Hawk.

In addition to the RT above, at 1513:50 a non-Airprox Tutor climbed out for a Traffic Service and at 1514:00 the Airprox Tutor left the Tower frequency and attempted to contact Approach. Furthermore, at 1514:13 (Figure 1) another aircraft called for radar vectors to PAR; this aircraft was told to standby.

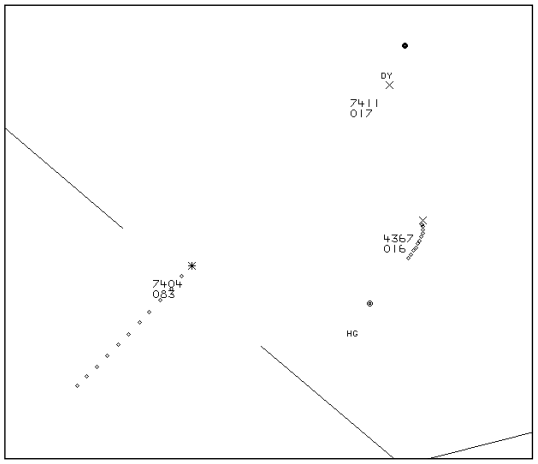

Figure 1: Geometry at 1514:13 (Hawk 7404; non-airprox Tutor 7411).

At 1514:49 (Figure 2), the clearance to join the visual circuit was passed to the Hawk, descending to 800ft QFE.

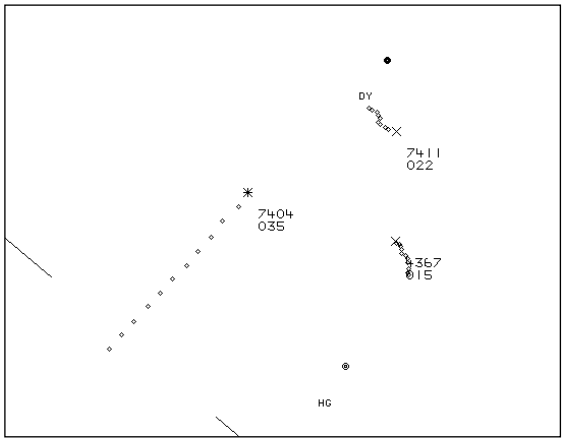

Figure 2: Geometry at 1514:49 with clearance to descend to 800ft QFE.

At 1514:52 (Figure 3), the Tutor emerged on the Jersey Radar replay. The Hawk reported the Tutor passing down the left hand side at 1515:10.

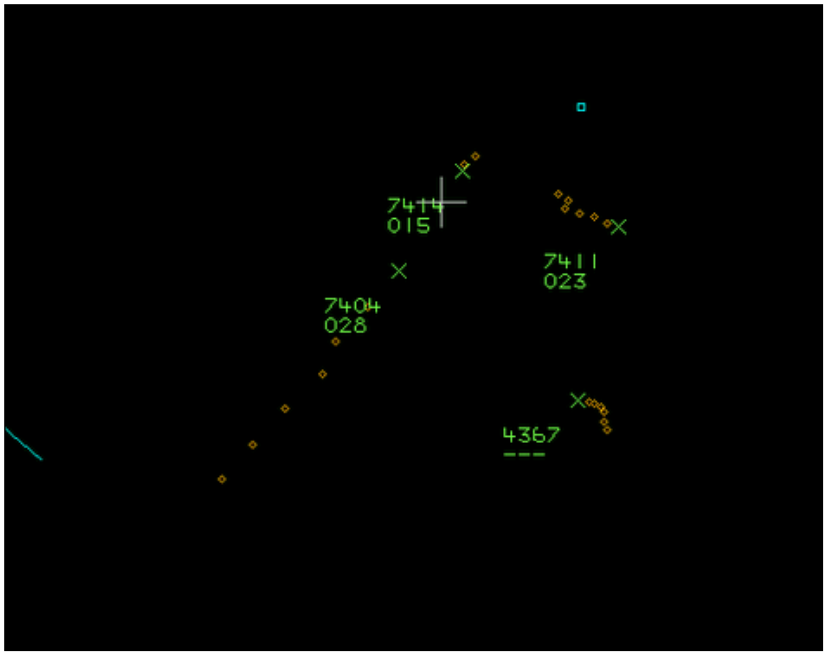

Figure 3: Aircraft geometry at 1514:52 (Hawk 7404; Tutor 7414).

The Hawk was not fitted with an Airborne Collision Avoidance System (ACAS) and was reliant on lookout and Traffic Information. The lookout was limited because there was no ACAS or Traffic Information and the first sighting was at 300ft horizontal separation. The trainee Approach controller did not provide information to the Hawk pilot under a Traffic Service, but the RT transcript and workload at the time provide context. The RPFL required ranges at 0.5nm intervals and this meant near constant RT with the Hawk, especially when updated clearances were passed. The trainee Approach controller had a further Tutor under a Traffic Service and another aircraft calling for a radar pick-up; the RT was so busy that the Airprox Tutor pilot left the Tower frequency at 1514:00 and managed to get the first call to Approach at 1515:28. The workload and fact that the data block (required for RPFL range and bearing information) had obscured the Tutor, meant that Traffic Information was not passed to the Hawk.

The Tutor pilot was not able to establish a Traffic Service with Approach and no update was provided by the ADC; the ADC had transferred the Tutor to the same frequency as the Hawk to allow radar deconfliction. In contrast to the Hawk, the Tutor TAS readout did give an indication of traffic and a degree of situational awareness. The TAS azimuth limitation is well known and the Tutor pilot attempted to manoeuvre above the descending Hawk whilst weaving to gain visual acquisition. The late sighting by the Tutor pilot demonstrated the limitations of lookout, especially with a light aircraft and a fast jet on converging headings.

The unit Occurrence Safety Investigation produced a thorough review of the incident. The investigation recognised that the Hawk was allowed to descend below 2000ft without appreciation of the departing traffic. There was a lack of Traffic Information to both pilots; the ADC assumed that the aircraft would be deconflicted by the Approach controller, who in turn was task focussed on the RPFL. The Approach controller's scan for conflictors was also obscured by a data block that provided the constant range and bearing information. The RPFL procedure was viewed to have latent issues with an ambiguous description of the traffic situation required for a descent below 2000ft. The TAS issue is a well publicised limitation in the design and a more accurate system would enhance the pilot's awareness; the Hawk T1/T1A would also benefit from a form of ACAS/TAS.

A number of unit recommendations were made to address the causes and contributory factors of the Airprox. For RPFLs procedures, it was recommended that in future the ADC would broadcast to all stations to provide awareness to crews about to depart. In addition, the liaison call between radar and ADC would include the squawk to allow the ADC to monitor the RPFL inbound using Hi-Brite. The review of the procedures is also considering a 'call for release' to allow the Approach controller to positively deconflict all departures. The uncertainty of what constitutes departing aircraft worthy of Traffic Information was also being reviewed and the unit is considering the use of a range at which departing aircraft should be taken into account for RPFL Traffic Information.

UKAB Secretariat

Both pilots shared an equal responsibility to avoid a collision, and for not flying into such proximity as to create a danger of collision[1], the geometry was head-on therefore both pilots were required to alter course to the right[2].

Comments

Navy HQ

This scenario was engineered by 2 assumptions. There was an assumption that the App controller was aware of the departing traffic and the further assumption was that App would deconflict the RPFL v the departing traffic. While the liaison from the App room to the VCP was completed there was no reciprocal flow to the App room for the departing traffic. Routinely, the departing traffic would not have normally impacted the App task, however, the fact it was a RPFL from the SW with a SW departure meant that this was a scenario that required a deconfliction. The introduction of a 'call for release' for traffic departing the Duty Runway when RPFL traffic is inbound should ensure safety and separation is maintained.

Summary

An Airprox was reported when a Hawk and a Tutor flew into proximity at 1515 on 29 July 2014, in the Yeovilton MATZ. The pilots were operating under VFR and VMC, the Hawk was conducting a RPFL and receiving a Traffic Service, and the Tutor was not yet under an ATS. The Tutor pilot received Traffic Information from his TAS, but the Hawk pilot did not receive any Traffic Information.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both 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 considered the pilots' actions. The Hawk pilot was conducting a Radar PFL; a manoeuvre which involved a high cockpit workload. He did not receive any Traffic Information from the controller, and did not have any form of TAS in the cockpit. The Board concluded that it was, therefore, unsurprising that he saw the Tutor late against the background terrain as he descended at a high rate of closure. For his part, the Tutor pilot did not receive any Traffic Information either from the ADC and, once he switched to the App frequency, he was unable to establish contact with the controller due to the frequency being busy with the RPFL recovery. Notwithstanding, he did get traffic awareness from his TAS, and had deduced from the busy frequency what was occurring. The Board commended him for his correct use of the information he gleaned from the TAS (taking into account its limitations in azimuth), and his pro-active attempts to weave and gain visual contact with the Hawk. However, the fact of the matter was that, with a small head-on target approaching at speed, he was unlikely to gain sight of the Hawk much before he did.

[1] Rules of the Air 2007 (as amended), Rule 8 (Avoiding Aerial Collisions)
[2] Ibid., Rule 10 (Approaching head-on)

In looking at the actions of the controllers, the Board noted that the App controller was extremely busy with the Radar PFL, which may have caused him to become task-focused and gave him little time for other traffic. It was suggested that as the procedure had been requested by the controllers for training purposes, another, quieter frequency could have been used for the Radar PFL, to enable the departing traffic and other inbounds to call on a less congested frequency. The Hawk was under a Traffic Service and did not receive any information on the outbound traffic. Furthermore, the Board considered that that communication between the ADC team, and the APP team, despite there being two supervisors involved, appeared to be lacking. Members opined that it seemed that the ADC had assumed that the Tutor pilot was already speaking to APP, and therefore did not factor him in when clearing the Hawk to circuit height. The Board were heartened to hear that Yeovilton has since changed its procedures such that, in future, the ADC must call for release of circuit traffic when a Radar PFL is inbound, thereby reducing the likelihood of the situation occurring again.

In looking at the cause of the Airprox, the Board quickly agreed that Yeovilton ATC had cleared the Hawk into conflict with the Tutor, and that there was a number of contributory factors. Firstly, the Radar PFL on the APP frequency had caused RT congestion; secondly, there was a lack of Traffic Information to the Hawk pilot; and thirdly, that the Radar PFL procedure was not robust enough to ensure deconfliction. The Board assessed the risk as Category A: separation had been reduced to the minimum for the circumstances, and chance had played a major part in events.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Yeovilton ATC cleared the Hawk into conflict with the Tutor.

Contributory Factor(s):

1. The Radar PFL on Approach frequency caused RT congestion.

2. Lack of Traffic Information to the Hawk Pilot.

3. The Radar PFL procedure was not robust enough to ensure deconfliction.

Degree of Risk: A.

ERC Score[3]: 100.

[3] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.