

AIRPROX REPORT No 2013018

Date/Time: 6 Apr 2013 1728Z (Saturday)

Position: 5115N 00049W
(3nm SW of Farnborough
- elev 238ft)

Airspace: Farnborough ATZ(Class: G)

Reporting Ac Reported Ac

Type: CE560XL PA28

Operator: Civ Comm Civ Trg

Alt/FL: ↓1000ft ↓800ft

NR NR (QFE)

Weather: NR VMC CAVOK

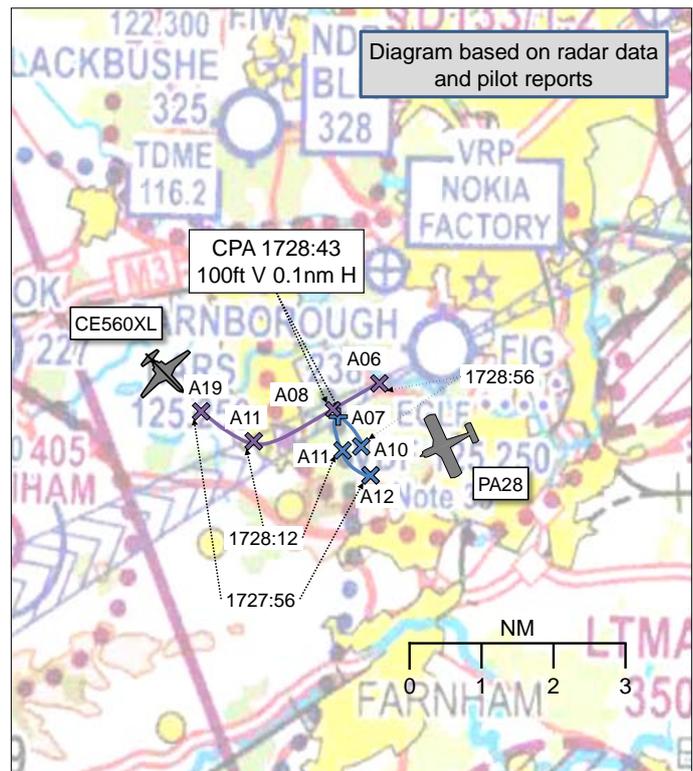
Visibility: NK 10km

Reported Separation:

200ft V/0.5nm H 100ft V/500m H

Recorded Separation:

100ftV / 0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CE560XL PILOT reports that he was 3nm from touchdown on Farnborough RW06, descending through 1000ft on the QNH at 160kt for a visual straight in approach, flying VFR in receipt of a DS from Farnborough APP, squawking Mode 3/A 1435, with Modes C and S selected. The ac is white with coloured stripes and was displaying HISLs, navigation lights and taxi lights. As the ac passed 3nm and just before the TCAS inhibition altitude of 900ft, the pilot was changing frequency to Farnborough TWR when he received a TCAS TA. The pilot of the CE560XL did not see the CPA but he heard the other pilot report that he was breaking R to avoid him and he then spotted the other ac slightly behind and to the R of his own ac.

THE PA28 PILOT reports heading 330° in the visual cct, on base leg approaching finals, at 70kt and 800ft in a white ac with red and blue markings. His ac was squawking Mode 3/A 4021 with Modes S and C switched on. He was flying VFR in VMC with over 10km of visibility and CAVOK. The ac was being flown by a qualified pilot under supervision from an instructor in accordance with the Club's currency rules. The instructor reports they were flying a normal RH cct to RW06; the supervised pilot had established the ac on base leg in descent towards finals when the instructor reports that he saw the CE560XL approximately 500m away descending in landing configuration. The instructor took control and commenced a RH climbing avoiding action turn away from the CE560XL and informed TWR that he was, "going around to avoid other aircraft" following which he heard the CE560XL request clearance to land. The PA28 pilot felt that the TWR controller sounded surprised and recalls that the controller asked, "confirm on finals?" following which the CE560XL was issued landing clearance and he repositioned his PA28 to rejoin the cct on base leg.

FARNBOROUGH APP was an instructor supervising an experienced controller who had returned from leave and they report vectoring a series of inbounds to RW06; due to gliding activity at Odiham, all inbounds were carrying out visual approaches. They report that they were aware the visual cct was active with the PA28 in it. They placed the CE560XL under a DS, which they limited from the R due to gliding at Lasham and Odiham. As the ac was vectored inbound APP reports spotting a primary contact at 3nm finals to RW06 and so called TWR who advised that he could see a hot air

balloon in that position. Farnborough APP report passing TI on the balloon and advised the CE560XL pilot that they would have to break off his approach if he was not visual with it. The pilot confirmed he was visual with the balloon and they instructed him to continue the approach with the balloon in sight. APP reports that they instructed the CE560XL pilot to contact TWR between 4.5 and 4nm. Shortly afterwards TWR called and asked if the CE560XL was coming straight in as he was not in 2-way RT contact with the pilot; APP reports that they then noticed that the PA28 had turned on to base leg at 2nm and so the instructor told TWR to, “*break off*” the PA28 whilst the UT tried to contact the CE560XL pilot.

FARNBOROUGH TWR reports that he could see the CE560XL N of the extended C/L for RW06 indicating 2400ft but was not in RT contact with the pilot; he reports that he assumed the ac was continuing S and instructed the PA28 pilot to report finals. He then saw on the Air Traffic Monitor (ATM) and through the window that the CE560XL was turning towards finals and he immediately contacted APP to check if the CE560XL was “*coming straight in*”; APP then instructed him to break off the PA28 and he reports that as he about to make the transmission the PA28 pilot informed him that he was taking avoiding action. TWR recalls that the CE560XL pilot then called on his frequency with less than 2nm to run and TWR issued a landing clearance following which the ac landed without further incident. He reports that the PA28 then extended downwind and then also landed without further incident.

ATSI reports that the Airprox occurred on Saturday 6 April 2013 at 1728:38 UTC, 1.6nm SW of Farnborough on final approach for RW06 and within the Farnborough ATZ Class G airspace, between a CE560XL and a PA28.

The Farnborough ATZ comprises a circle radius 2.5nm, centred on the midpoint of RW06/24 and extending to a height of 2000ft aal (elevation 238ft); except that part of the circle situated N of the M3 Motorway.

The CE560XL was inbound IFR from Liverpool and was in receipt of a DS from Farnborough APP, with reduced traffic information due to gliding activity in the area. The CE560XL was cleared for a visual approach and had been transferred to Farnborough TWR on frequency 122.500MHz just prior to the Airprox.

The PA28 was in the visual RH cct for RW06 and was in receipt of an Aerodrome Control Service from Farnborough TWR on frequency 122.500MHz.

Farnborough APP was manned by an experienced controller acting as OJTI whilst training an experienced controller who was undergoing training following a return to work after a prolonged leave. The TWR controller was relatively new to the unit and had completed a VCR validation in June 2012.

The Farnborough Manual of Air Traffic Services (MATS) Part 2, Page APR -13, Paragraph 2.12, states:

‘Aircraft with an ORCAM squawk that are code-callsign converted do not need to be warned in to the VCR controller. However, there are occasions when an aircraft SHALL be warned in:

- When the inbound aircraft goes visual or makes a non-standard approach...’

There was some ambiguity in the interpretation of this instruction and controllers accept that this would normally apply for ac making an ILS approach and requesting a visual or non-standard approach. However, it has become common practice when operating on RW06 in good weather conditions with glider activity, that when all IFR inbounds are making visual approaches, there was no requirement to warn-in the arrivals as it was ‘assumed’ they will be completing a visual approach. However this procedure was not detailed in the Farnborough MATS Part 2.

The visual cct is not very often active at Farnborough as the unit is not a training airfield and controllers may operate for a period of months without seeing any cct traffic. In addition there are

four radar positions and one TWR position and it is therefore common for dual valid controllers to spend a greater percentage of their operational time in radar.

Because of the good weather the unit had been very busy with heavy LARS traffic throughout the day. The incident happened in the late afternoon and traffic levels had reduced and were considered to be light. The Approach and LARS(W) positions were not band-boxed. Throughout the day the unit had experienced multiple primary contacts believed to be gliders and this had resulted in traffic being tactically vectored onto a base leg for the visual approach to RW06.

CAA ATSI had access to the RTF recording of Farnborough LARS(W), the area radar recording, written reports from the two pilots, the Farnborough LARS(W) controller report together with the Farnborough unit report. The workload and traffic levels of the LARS(W) controller were reported as low but with added complexity due to the gliding and balloon activity.

The Farnborough weather is provided:

METAR EGLF 061720Z 06007KT 030V100 CAVOK 09/M05 Q1023=

At 1716:10, the PA28 rejoined overhead for RH ccts on RW06 and shortly after TWR took over from the off-going controller.

The PA28 continued in the cct and an inbound GLEX ac not involved in the Airprox was being vectored for a visual approach.

At 1719:22, the PA28 requested a bad weather cct and shortly afterwards the GLEX at an altitude of 4200ft, was shown on a southerly track, crossing RW06 final approach at a range of 2.8nm.

The GLEX was then vectored approximately 7nm S of the airfield followed by a R turn for a wide base leg to RW06. At 1723:40 APP passed traffic information on the PA28 in the GLEX ac's 1 o'clock at a range of 3.5nm at 1000ft.

At 1724:00, the PA28 was on short final and the GLEX reported the PA28 ahead in sight. The GLEX was then cleared for the visual approach turning final at not less than 3 miles DME.

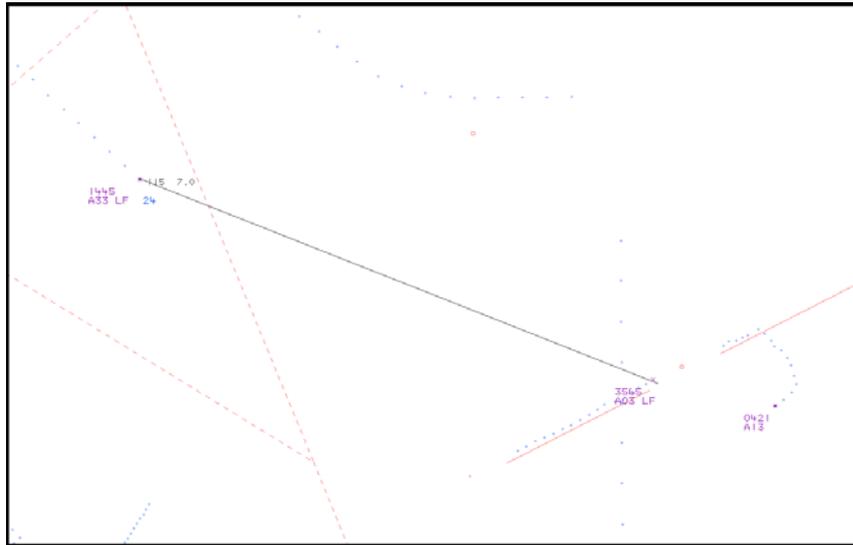
At 1724:16, the CE560XL contacted Farnborough APP maintaining an altitude of 6000ft. APP advised the CE560XL pilot to expect vectors for a visual approach to RW06 with current information 'W' and QNH1023. The CE560XL was placed on a radar heading, descended to 3400ft and advised that on passing 5000ft, [when leaving CAS] to expect a DS with reduced traffic information due to gliding activity at Lasham and Odiham.

At 1725:20, the CE560XL pilot was 15nm from touchdown and was asked to confirm that he would be able to accept a visual approach from that position. The CE560XL replied, "Affirm..." and APP gave the CE560XL further descent to 2400ft.

APP then observed a primary contact ahead of the CE560XL, 3nm from touchdown and at 1726:22 he telephoned the Tower to ask if TWR could see anything on a 3nm final. TWR confirmed that he could see a balloon. The balloon was not shown on the area radar recording. [At interview TWR estimated that the balloon was probably between 2000ft and 3000ft.]

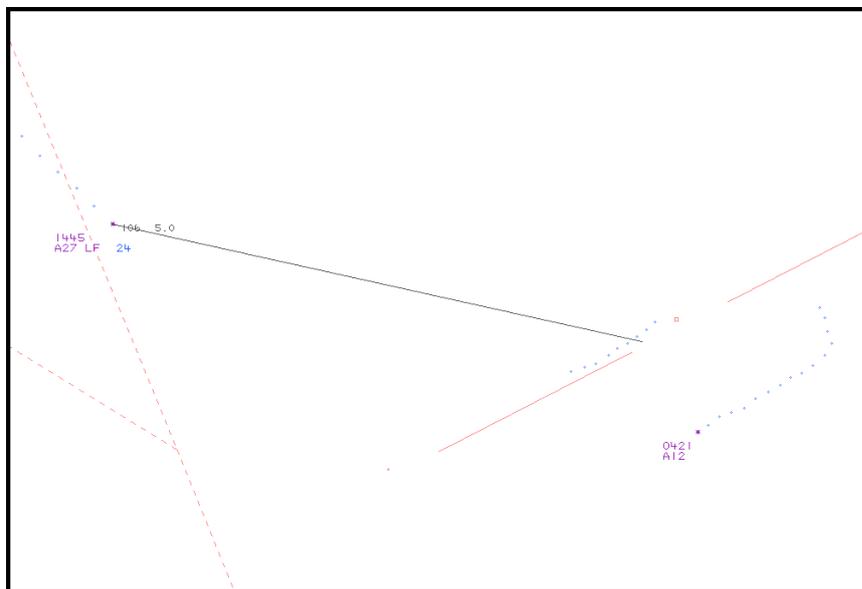
At 1726:33, APP transmitted, "(CE560XL)c/s are you visual with a hot air balloon in your twelve o'clock range of five miles." The CE560XL replied negative and APP responded, "(CE560XL)c/s roger it's on three mile final approach and er if you're not visual with the hot air balloon I'm going to need to break you off the approach and wait for it to move." The CE560XL pilot replied, "Er okay ????? ????? (CE560XL)c/s" and then, "Er affirm we have it in sight (CE560XL)c/s." At this point APP had started a telephone call to the TWR but then advised TWR, "it's OK he's got it in sight now" and the call was terminated.

At 1726:36, the PA28 pilot reported downwind and TWR responded, “(PA28)c/s *Roger report final.*” The CE560XL is shown 7nm W of the airfield squawking 1445 with the PA28 downwind RH (Picture 1).



(Picture 1 – MRT at 1726:34)

At 1727:13, APP asked the CE560XL pilot if he was happy to continue for the visual approach with the balloon in sight. The pilot replied, “*Continue approach with the balloon in sight.*” APP responded, “*And (CE560XL)c/s you are cleared the visual approach further descent in accordance with the standard noise abatement procedures to be established not less than three DME.*” This was acknowledged by the CE560XL pilot. The CE560XL was 5nm W of the airfield at 2700ft (Picture 2).

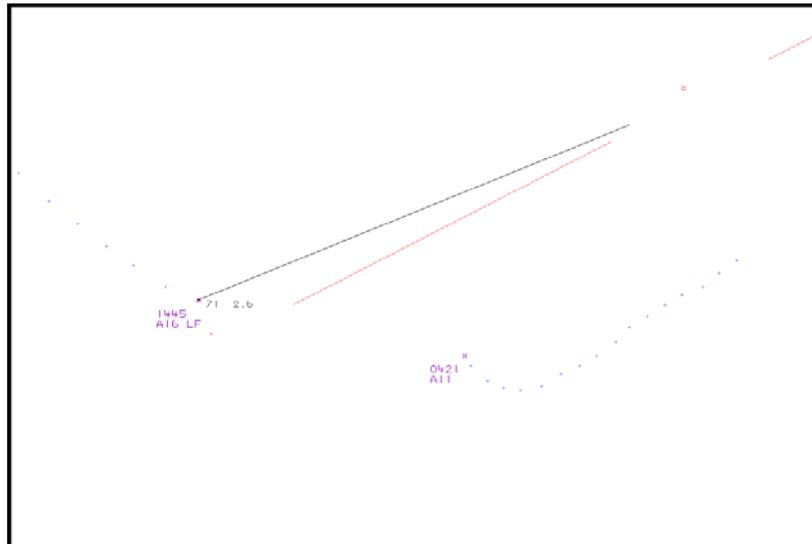


(Picture 2 – MRT at 1727:13)

At 1727:34, the CE560XL was instructed to contact Farnborough Tower on 122.5MHz. This was acknowledged by the CE560XL pilot and this transmission ended at 1727:44.

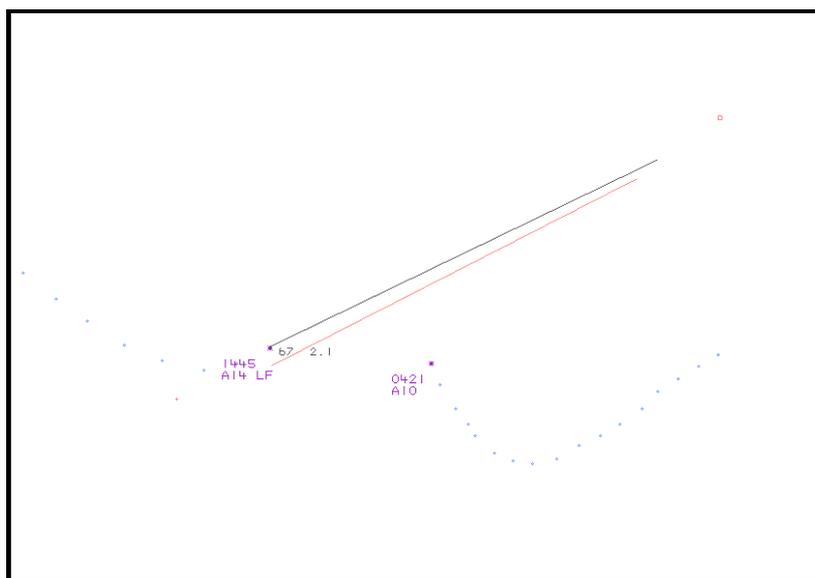
When questioned TWR believed that he saw the CE560XL on the ATM at 1900ft and had started to become concerned, but because the CE560XL had not called, he considered that APP probably intended to route the CE560XL S of the C/L to avoid the balloon.

At 1728:13, APP showed the PA28 had turned onto base leg and the CE560XL was beginning to commence a L turn towards final approach (Picture 3).



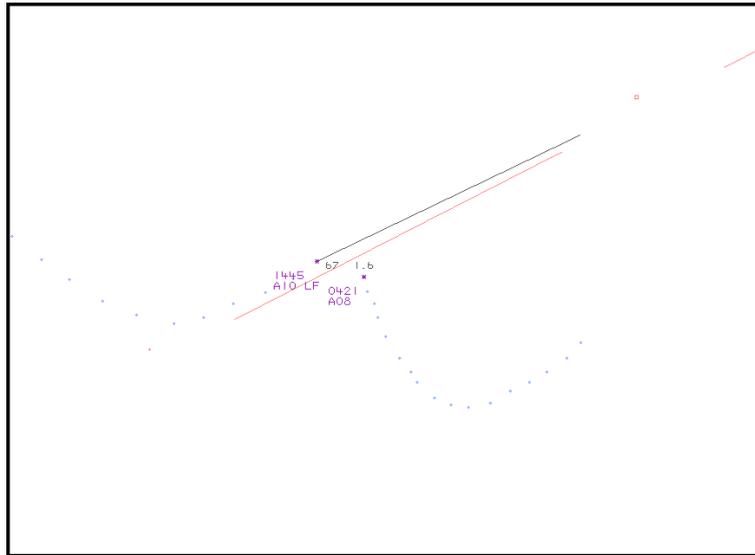
(Picture 3 – MRT at 1728:13)

The CE560XL was indicating a groundspeed of 179 knots and the PA28 69 knots. TWR recognised that the CE560XL was turning towards final approach and at 1728:23, TWR telephoned APP (in an urgent tone), “...is the CE560XL coming in now” (Picture 4).



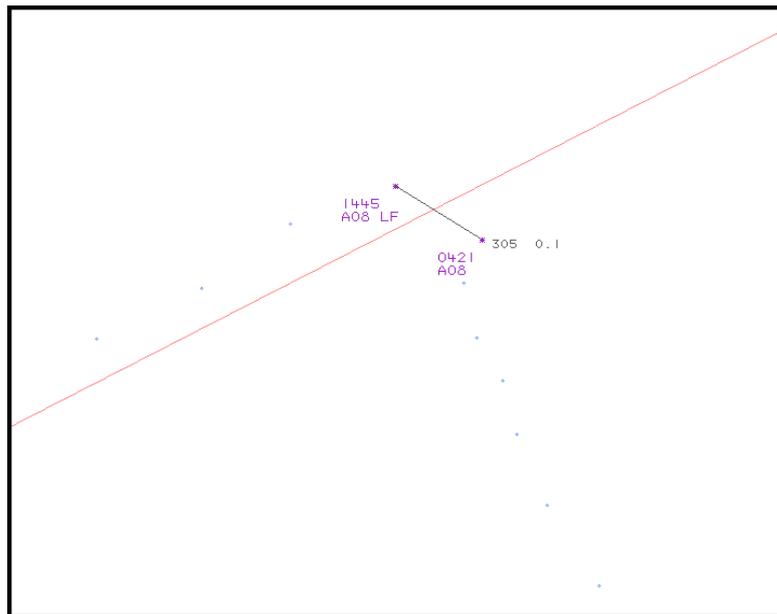
(Picture 4 – MRT at 1728:23)

APP responded, “Er should be with you sorry-Yes he’s visual” and TWR advised that the CE560XL had not called. Both controllers attempted to contact the CE560XL at 1728:36. The distance between the two ac was 0.3nm (Picture 5).



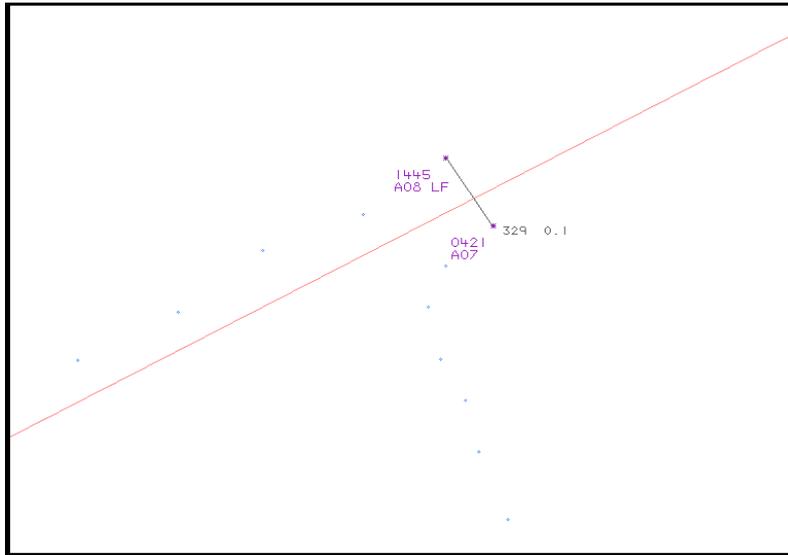
(Picture 5 – MRT at 1728:36)

At the end of the call (1728:38) the OJTI instructed TWR to break off the PA28. TWR responded, “*He’s breaking off.*” The PA28 was shown commencing a R turn (CPA) with a minimum separation of 0.1nm at the same level (Picture 6).



(Picture 6 – MRT at 1728:38)

At 1728:42, the CE560XL pilot called, “(CE560XL) *Farnborough Tower*” and the PA28 called, “(PA28)c/s *is avoiding.*” Radar showed two ac on parallel tracks with a minimum horizontal distance of 0.1nm (Picture 7).



(Picture 7 – MRT at 1728:42)

The CE560XL pilot reported, “*Er (CE560XL)c/s we’re final Runway zero six.*” TWR replied, “*(CE560XL)c/s you are clear to land the wind zero five zero six knots there is traffic just turned right is a P A twenty-eight.*” The CE560XL pilot responded, “*Er we just saw it (CE560XL)c/s.*”

At 1729:10, the PA28 pilot reported, “*(PA28)c/s apologies for that we were not aware of his approach.*” The CE560XL pilot advised, “*Er we were cleared to it.*”

At interview TWR indicated that after he had taken over the watch, he noted that the previous inbound GLEX had been positioned to the S before joining base leg and had an expectation that the CE560XL would do the same. TWR believed that this opinion was reinforced when he thought APP was avoiding the balloon and again when the CE560XL hadn’t called. TWR also indicated that, in his experience, the operating company would accept a delay in the interest of safety and he thought that they would probably be avoiding the balloon by routeing S of the C/L.

TWR recalled that when the CE560XL was at 2400ft, APP confirmed that the pilot had sighted the balloon and TWR still believed the CE560XL was positioning to the S. Later when the CE560XL was at 1900ft he began to have concerns and monitored the CE560XL on the ATM. As the CE560XL started turning towards final he contacted APP to confirm their intentions and advise them that the ac had not called on the Tower frequency.

TWR described how his experience of RW06 operations with an active cct was fairly limited and ccts are not a common feature at Farnborough. In hindsight, TWR believed that rather than giving the PA28 an early clearance to final when the CE560XL was within 15nm, he should perhaps have kept his options open by tactically holding the PA28 at the end of the downwind leg. TWR indicated that the PA28 had previously completed a bad weather cct and this may have led him to believe that his next cct would also be compact, which was not the case.

At interview APP confirmed that the plan was to vector the CE560XL for a visual approach on L base. When questioned, APP confirmed that TWR was expected to monitor arriving ac on the ATM and APP does not generally provide a ‘warning-in’ check. TWR would use his experience and judgement to manage the cct appropriately. There was some discussion regarding the variation in the two approaches made by the GLEX positioned S of the airfield and the CE560XL positioned for L base. APP indicated that this depended very much on the level of the ac and traffic situation, but it was not unknown for CPT inbound to accept L base with a greater rate of descent. It was agreed that this procedure required an experienced understanding of the varied operations at Farnborough. APP believed that the additional RT and phone calls generated by the appearance of the balloon were contributory factors that delayed the transfer of the CE560XL to the Tower and this was

compounded when it took a minute for the crew to contact the Tower. [58 seconds from the end of one transmission to the beginning of the next].

When asked about the comparison between the arrival of the GLEX with traffic information about the PA28, compared to that of the CE560XL, APP indicated that when transferring the GLEX, it was apparent that he would be number 2. At the point the CE560XL was transferred to the Tower, the PA28 was observed downwind and there was an expectation that TWR would probably orbit the PA28 at the end of the downwind leg.

There was some additional discussion regarding the CAA safety notice 2013/001- Integrating Traffic in the Vicinity of an Aerodrome. APP confirmed that due to the limited amount of cct activity, the unit were developing an Aerodrome control training module aimed at defensive controlling techniques.

APP advised that in Class G airspace there is no requirement for airspace users to contact Farnborough. However the ATSU does have a very pro-active policy of communicating and interacting with local airspace users, aimed at encouraging them to participate either by contacting or communicating their intentions to Farnborough. The balloon operator had not done so on this occasion.

As a result of this occurrence the ATSU issued an instruction to controllers (TOI 005/13) subsequently revised and replaced by TOI 008/13, which states:

‘Controllers are reminded that existing unit procedures require any arrival other than an ILS to be notified to the VCR controller prior to commencing the approach at a suitable time, with the following exception: -

During periods of Odiham glider activity, any ac inbound to Farnborough expected to complete a Visual approach shall be notified to the VCR controller at or approximately at 10nm from the airfield.

VCR controllers should consider using defensive controlling techniques following receipt of such advice, with particular reference to other RW activity. This may include holding any cct traffic at a suitable location, or delaying outbound traffic.’

ANALYSIS

There was some ambiguity in the guidance to controllers in the Farnborough MATS Part 2. The practice of not requiring APP to warn-in the arrivals when all IFR inbounds will be making a visual approach, led to the misunderstanding. The point at which ac request or elect to continue for the visual approach can vary, especially when in some situations the arrival might be vectored S of the airfield to lose height. Whenever there is doubt, the act of coordination or ‘warning-in’ can clarify an intended or changed plan.

Having just taken over the position, TWR observed the previous arrival position S of the airfield before turning back. This, combined with the distraction of gliders and the balloon on a 3nm final, very likely gave him an expectation bias that the CE560XL would follow the same arrival route. TWR’s perception of the operating company led him also to believe that they would very likely take a short delay in order to avoid the balloon. This caused TWR to misunderstand the intentions of APP to position the CE560XL on L base.

There had been no communication from the balloon company or pilot regarding their flight, which was shown intermittently on the Farnborough Radar display at 3nm on final approach. The balloon was not shown on the area MRT radar. The balloon disrupted and delayed the normal sequence of events, with consideration for a change of plan and cct combined with phone calls to the Tower and additional RT communications with the CE560XL crew. This delayed the normal transfer of the CE560XL to the Tower. At this point the CE560XL crew were probably concerned with preparation

for landing, positioning around the balloon and then contacting the Tower. There was consequently a delay of 58 seconds before the CE560XL contacted the Tower, which was just as the Airprox occurred.

The altitude of the CE560XL as it approached L base should have signalled to TWR that the CE560XL was likely to be turning onto final. However, because the CE560XL had not called the Tower at the range expected for a L base join, this reinforced TWR's perception that the CE560XL was going to go through the C/L, probably to avoid the balloon. When the CE560XL turned towards final, the PA28 had already turned onto base leg and there was very little time to react. TWR was confused and rather than instinctively recognising the urgency of the situation and giving avoiding action or advice to the PA28, he contacted APP and asked if the CE560XL was coming straight in. At this point it was too late for the ATC to recover from the situation and the PA28 pilot executed an avoiding R turn.

The unit procedures do not have a 'warning-in' system for notifying or updating TWR regarding arrivals during the intermediate approach phase. Best practice at the unit requires TWR to monitor the ATM and to interpret the sequence and intentions of the APP operation. APP will coordinate with TWR when considered appropriate. Had TWR known that the CE560XL was joining on L base for the visual approach, he would have delayed the PA28. If there had been a doubt in the controller's mind he could have acted defensively by delaying the PA28 at the end of the downwind leg. The unit procedures rely on the experience of controllers and CAA ATSI consider that these procedures allowed for the possibility of ambiguity and misunderstanding.

Farnborough do not operate a busy visual cct and there is little opportunity to develop defensive skills in the integration of arriving IFR and VFR cct traffic. In January 2013, the CAA promulgated Safety Notice 2013/001 regarding this subject.

CONCLUSIONS

The Airprox occurred when TWR misinterpreted the intentions of APP and cleared the PA28 to final approach, which brought the PA28 into conflict with the CE560XL that had also been cleared to final by APP.

The following were considered to have been contributory factors:

1. The unit practice of not 'warning-in' arrivals to the Tower in circumstances when all ac are making visual approaches, was not included in the ATSU MATS Part 2 and was at variance with the instruction which required controllers to 'warn-in' ac on occasions when inbound ac make a visual or non-standard approach.
2. Without the appropriate coordination or 'warning-in', the unit practices and procedures relied upon TWR's experience and use of ATM, to interpret the intentions of APP in order to manage the arrival of the CE560XL into the visual cct.
3. The unexpected appearance of the balloon on final approach caused APP to consider an alternative plan that involved additional RTF and telephone communication. This, together with the increased workload on the flight-deck, resulted in the delayed transfer of the CE560XL to the Tower, which served to reinforce TWR's belief that the CE560XL would be vectored through the C/L to the S.

CONCLUSIONS

Notwithstanding the content of Farnborough TOI 2013/008, which expires on 30 June 2013, it is recommended that in light of this occurrence and CAA Safety Notice 2013/001, Farnborough ANSP

review and incorporate appropriate procedures into their MATS Part 2, for the integration of IFR arrivals into the visual cct pattern.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

The Chairman opened the discussion by praising APP for ensuring a seamless transition between the CE560XL's departure from CAS and the application of a DS. The discussions focussed on three areas: the steepness of the CE560XL's approach, the ATC procedures for notifying visual approaches to TWR and the actions of the TWR controller.

A pilot Member familiar with the CE560XL family of ac advised the Board that the ac's steep descent was well within the capabilities of the ac, could be considered normal for an ac of this type and would not be uncommon at airports such as this one. It was agreed that the approach profile of this ac did not contribute to the occurrence sequence.

Several ATC Members expressed surprise that the Unit procedures did not require APP to notify TWR of visual inbound in these circumstance and commented that the inbound notification call was usually intended to alert TWR and allow him to plan more accurately for cct integration rather than simply to notify the type of approach. The discussion moved on the presence of the hot air balloon and its effect on the incident sequence. Members opined that the balloon did not contribute directly to the event but that the process of monitoring and passing TI on it and visually searching for it had been a minor distraction for APP, TWR and the CE560XL crew. Considering the actions of APP and TWR, ATCO Members agreed that the lack of a procedure for notifying visual inbound traffic to TWR, and the expectation that TWR would listen out and glean the required information had lead to TWR making incorrect assumptions about the expected flight path of the CE560XL; this procedural factor had been fundamental to the genesis of this encounter. The lack of notification about the CE560XL's arrival from APP and TWR's assumption that the CE560XL would follow the track of the previous inbound contributed to TWR's erroneous SA and resulted in the close proximity of the CE560XL and the PA28. Taken together, the Board concluded that the Cause of the Airprox was that ATC did not integrate the ac safely into the visual cct.

Turning to the resolution of the conflict, ATC Members felt that when TWR realised there was a conflict he should have broken the PA28 off without delay rather than calling APP for further information on the CE560XL. In the event ATC did not contribute to the resolution of the conflict. For their part, the CE560XL crew had some information from their TCAS and a TA, but they did not see the PA28 until after hearing the PA28 pilot call 'going around' and the CPA. Fortunately the PA28 pilot had checked the final approach before turning in from base leg and took appropriate action when he realised that the other ac was proceeding straight to finals.

The Board noted that the activation of visual only approaches to this RW was an infrequent event and felt this made it even more important that a co-ordination procedure for TWR and APP was put in place. They discussed the recommendations made in the ATSI report and sought the opinion of the SRG Advisor who, whilst unable to speak for any Regional Inspectors, felt that this occurrence had similarities with some previous events and the recommendations were commensurate with the guidance in CAA Safety Notice 2013/001 regarding the coordination and integration of visual cct traffic with inbound ac. The Board considered that the recommendations made by ATSI were appropriate and did not require any additions.

In assessing the Risk, the Board considered the CPA distance of 100ft V and 0.1nm H and that the CE560XL crew had not seen the PA28 in time to take any effective action. There was some discussion about whether this was a B or a C Risk and opinion was closely divided. It was decided by a vote that although the distances were quite close, in the context of a cct environment and as the PA28 pilot had seen the other ac in time to take fully effective avoiding action, albeit quite late, that the event was a C Risk.

The Board discussed the safety barriers which were relevant in this Airprox and which had been effective in preventing a collision. The Board concluded that none of the ATC safety barriers had

been effective and the Airprox was caused when ATC did not integrate the ac safely into the visual cct. Both aircrews had a responsibility to see and avoid other aircraft but this barrier had only a limited effect as the CE560XL crew did not see the PA28 before the CPA. Overall the Board assessed the barriers to have had a limited effect resulting in a score of 21 on the ERC matrix.

PART C: ASSESSMENT OF CAUSE AND RISK:

Cause: ATC did not achieve safe integration of visual cct traffic.

Degree of Risk: C

ERC Score: 21