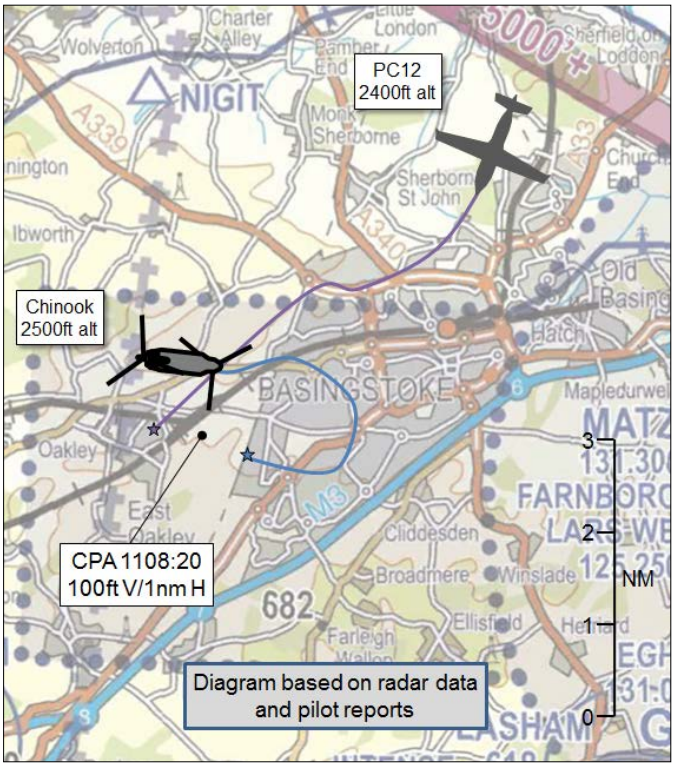
AIRPROX REPORT No 2016124

Date: 30 Jun 2016 Time: 1108Z Position: 5115N 00109W Location: 7nm NW Odiham

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Chinook	PC12
Operator	Civ Comm	Civ Comm
Airspace	Odiham MATZ	Lon FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Odiham	Farnborough
Altitude/FL	2500ft	2400ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Green	Blue, Silver
Lighting	Nav, Anti-Cols, Landing	NK
Conditions	IMC	VMC
Visibility	1.5km	
Altitude/FL	2000ft	2400ft
Altimeter	QNH (995hPa)	
Heading	270°	
Speed	NK	
ACAS/TAS	Not fitted	TAS
Separation		
Reported	0ft V/0.4nm H	NK
Recorded	100ft V/1nm H	



THE CHINOOK PILOT reports that he was on a radar heading for a PAR recovery to Odiham, IMC, at, he believed, 2000ft. At approximately 7nm to Odiham, ATC asked the crew to hold in their current position by way of a 360° turn. The crew commenced the turn, during which ATC asked whether they were visual with the traffic ahead; this caused the crew some concern because they weren't visual and were intermittent IMC. Whilst still in the left-hand turn [UKAB note: he recalled it was LH but in fact it was a RH turn as shown on radar] the PM noticed a fixed-wing aircraft in the 2 o'clock position at the same height, on a similar, but closing heading and estimated to be within 0.5nm. He made the PF aware of the traffic, who decided to initially stop the turn to remain VMC and then turn right to avoid a potential collision. Once clear of the traffic, ATC resumed vectors for the PAR.

He assessed the risk of collision as 'Medium'.

THE PC12 PILOT had no recollection of the Airprox and was asked to provide a report some time after the event. He noted that this was a regular route of his and he always contacts Farnborough for a service, either a Basic or a Traffic depending on the conditions. Farnborough normally arrange a MATZ penetration and he always flies at 2400ft to be beneath the TMA when closer to London. His logbook indicated that he didn't do an instrument approach at his destination on that day, so he presumed the weather was VFR. He reported that he occasionally received traffic warnings from Farnborough and from the TAS, and often sees Chinooks manoeuvring, but that he does not remember taking any avoiding action on this particular day, and can certainly say he had not come close enough to a Chinook to consider it an Airprox.

THE ODIHAM APPROACH CONTROLLER reports that due to manning constraints, he was ATCO i/c as well as the Approach Controller. He had another Chinook in the radar circuit whilst the Airprox Chinook was conducting an Air Test 15nm west of Odiham on a Basic Service. On completion of the Air Test the Airprox Chinook pilot requested a Traffic Service and an IFR pick-up for a PAR. After

identifying him, an instruction to climb to 2000ft was given, and, once level, a vector towards Odiham together with Traffic Information on an aircraft operating in the Popham area. Once the Chinook was approximately 10nm in the Approach lane, the controller called traffic to its pilot as 10 o'clock, 3nm crossing left to right at a similar height. He asked whether the pilot was visual, to which the reply was negative; with the conflicting traffic now 1.5nm away and converging, he instructed the pilot to take up a right-hand orbit to avoid it. Just as the Chinook started the orbit, the controller called the traffic again, but by now the track of the conflicting aircraft had also changed, so he instructed the pilot to stop the turn. The pilot then reported visual with a fixed-wing aircraft. The controller then called Farnborough ATC to ask what the other aircraft was doing, Farnborough reported that they had needed to give avoiding action to avoid the Chinook, but also commented that it was Class G airspace. Once the conflicting traffic had passed, he turned the Chinook back on track and it continued the approach without any further issues.

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

THE FARNBOROUGH LARS WEST CONTROLLER reports that he was reasonably busy and was providing a Basic Service to the PC12 amongst other aircraft. At about 1006 he saw an Odiham squawk tracking eastbound on a converging heading with the PC12; although the PC12 was only under a Basic Service, due to the risk of collision the controller gave its pilot Traffic Information on the Chinook. As he gave the warning, he could see the PC12 radar return turn to the right to pass behind the Odiham traffic and the pilot reported visual with it. He then saw the Odiham return turn to the right as well. The PC12 then turned left to continue towards Southampton, but the Odiham aircraft continued to turn back right onto west and towards the PC12. The telephone line from Odiham rang and he answered it. The Odiham controller asked what the PC12 was doing, he advised that he had avoided their traffic and wondered why Odiham had then turned their traffic back towards his aircraft. Although he couldn't remember what the Odiham controller said next, it prompted him to remind them that it was only Class G airspace.

Factual Background

The weather at Odiham was recorded as follows:

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METAR EGVO 301050Z AUTO 23009KT 9999 FEW018/BKN046/16/12 Q1010=
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Relevant portions of the tape transcripts between Odiham Approach and the Chinook are below:

From	To	Speech	Time
Chinook	Approach	Hotel copied [Chinook c/s].	11:06:38
Approach	Chinook	[Chinook c/s] turn right heading 1-0-0 degrees.	11:06:40
Chinook	Approach	Turn right 1-0-0 degrees [Chinook c/s]	11:06:45
Approach	Chinook	[Chinook c/s] traffic left 10 o'clock, 2 miles, crossing left right, indicating similar altitude, are you visual.	11:06:47
Chinook	Approach	[Chinook c/s] negative.	11:06:53
Approach	Chinook	[Chinook c/s] pick up a quick right hand orbit to avoid	11:06:56
Chinook	Approach	Right hand orbit [Chinook c/s]	11:07:01
Approach	Chinook	[Chinook c/s] previously called traffic passing down your left hand side, a mile north, won't be a factor	11:07:09
Chinook	Approach	Copied traffic not sighted [Chinook c/s]	11:07:16
Approach	Chinook	[Chinook c/s] complete one right hand orbit roll out heading 090 degrees	11:07:18
Chinook	Approach	Roll out heading 090 degrees [Chinook c/s]	11:07:23

From	To	Speech	Time
Approach	Chinook	[Chinook c/s] stop turn fly heading 1-8-0 degrees	11:07:50
Chinook	Approach	[Chinook c/s]stop turn, turning left 1-8-0 degrees	11:07:57
Chinook	Approach	Chinook has traffic sighted right 1 o'clock, similar level	11:08:05
Chinook	Approach	Approach, [Chinook c/s], turning right to avoid traffic, if I go in cloud I will lose him. Looks to be Farnborough fixed wing.	11:08:18
Approach	Chinook	[Chinook c/s] affirm, tracking south west, if you roll out heading 0-9-0 degrees.	11:08:27
Chinook	Approach	[Chinook c/s] maintaining 2-7-5 degrees this time, just confirm if you want me left or right turn for 0-9-0	11:08:35
Approach	Chinook	[Chinook c/s] right turn heading 0-9-0 degrees	11:08:41

Analysis and Investigation

CAA ATSI

The area radar recordings were obtained and the Farnborough frequency and phone lines were listened to. The Farnborough unit report was also reviewed.

At 1059:30 the PC12 called Farnborough LARS West, a Basic service was agreed, and a MATZ transit was approved as requested by the pilot. The PC12 was asked to squawk code 0432. The PC12 was approximately 4nm south of White Waltham at 2400ft. Farnborough LARS West have approval to clear aircraft to transit through the Odiham MATZ without co-ordination in most cases.

At 1107:01 (Figure 1) on observing the potential conflict of the PC12 and the Chinook, the Farnborough Controller provided Traffic Information to the PC12 about the unknown aircraft (Chinook) which was crossing right to left at the same level. The pilot reported turning to the right to avoid, but did not state whether or not they had the traffic in sight.

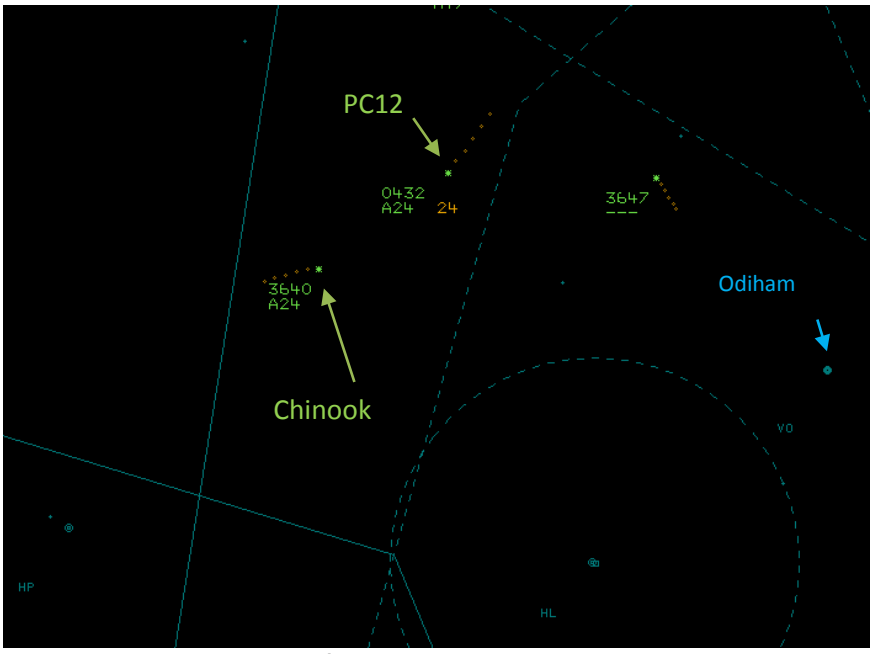


Figure 1 at 1107:01

At 1107:19 the radar indicated that the PC12 had turned onto a westerly heading and the Chinook was turning onto a southerly heading. At 1107:52 (Figure 3) the PC12 had turned left again routing towards Southampton. The Chinook was now heading west.

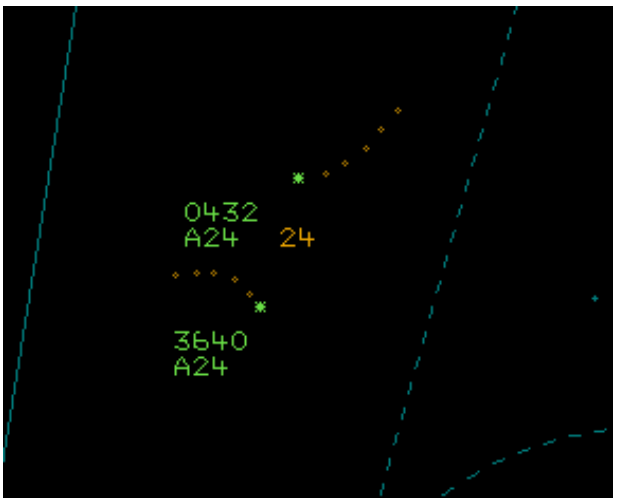


Figure 2 at 1107:19

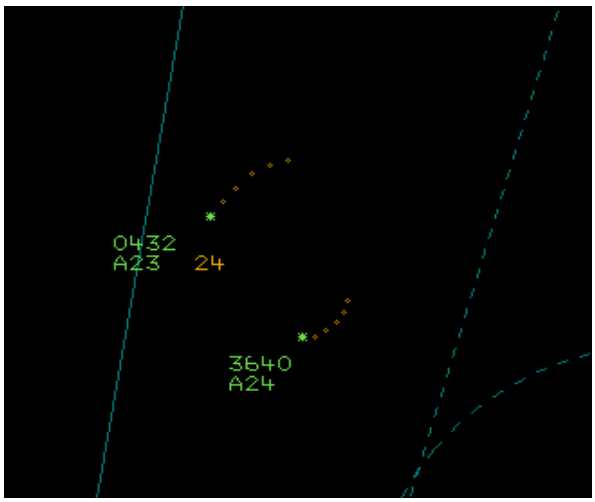


Figure 3 at 1107:52

At 1107:55 the Odiham controller initiated a telephone call to the Farnborough LARS controller. Although the call was answered, the Farnborough controller updated the Traffic Information to the PC12, at the same time as the Odiham controller instructed the Chinook to stop the turn and fly heading 180°. The telephone conversation then commenced, the Odiham controller queried the intentions of the 0432 code and the Farnborough Controller advised that the aircraft had taken avoiding action on the Chinook. The Odiham controller advised they had taken avoiding action on the PC12 too. The Farnborough controller remarked that it was Class G airspace and that the PC12 was now going to Solent Radar (Southampton) as by now the avoiding action turns had taken the aircraft away from each other.

CPA occurred at 1108:20 – co-incident with the conversation taking place between the Farnborough and Odiham controllers – minimum horizontal distance of 1nm and minimum vertical distance of 100ft.

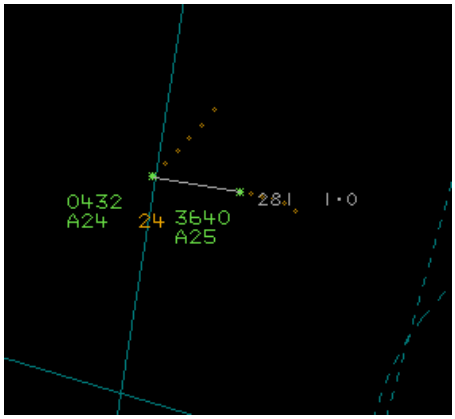


Figure 4 at 1108:20 - CPA

The Odiham controller reported that prior co-ordination had been effected to Farnborough Approach about the Chinook making the approach to Odiham. However, the Farnborough unit report mentioned that, due to workload, the Farnborough Radar assistant had been unable to pass this information onto the LARS West radar controller. One of the conditions as part of Farnborough's authority to approve Odiham MATZ transit is that co-ordination is made with Odiham, however, under a Basic Service a controller is not required to monitor a flight. On this occasion, when the Farnborough controller observed the potential conflict and as both aircraft were indicating the same level, Traffic Information was passed as a priority prior to the co-ordination taking place. Ultimately, pilots operating in Class G airspace remain responsible for their own collision avoidance.

Military ATM

At 1106:24 (Figure 5), The Chinook was to the West of Odiham and being positioned for a PAR for RW09 on a Traffic Service. The Odiham controller had spoken with Farnborough ATC to inform them of the approach to RW09 as per procedures. The PC12 is to the North West of Odiham tracking South West; the radar replay shows the aircraft on a converging heading at the same height.

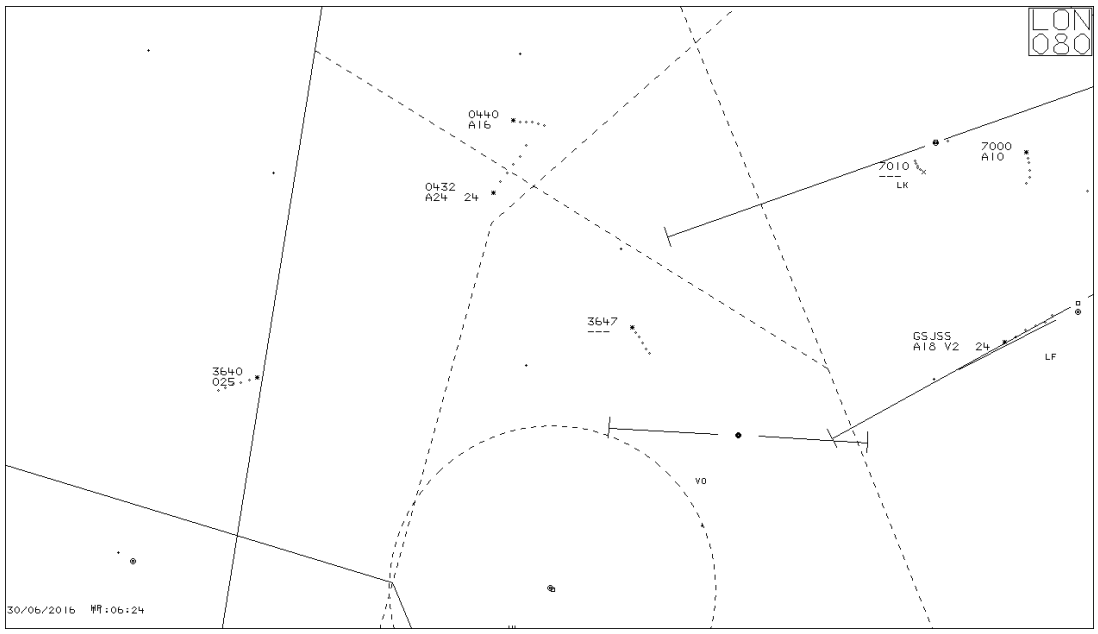


Figure 5: Geometry at 1106:24 (Chinook squawking 3640; PC12 squawking 0432).

At 1106:47 (Figure 6), the Odiham Approach controller passes Traffic Information to the Chinook pilot on the PC12, *'traffic left 10 o'clock, 2 miles, crossing left right, indicating similar altitude, are you visual'.* The Chinook pilot reported not visual, and the controller issued a turn to the right and an orbit in order to resolve the confliction. At this time there is 3.4nm separation and the aircraft are at the same height.

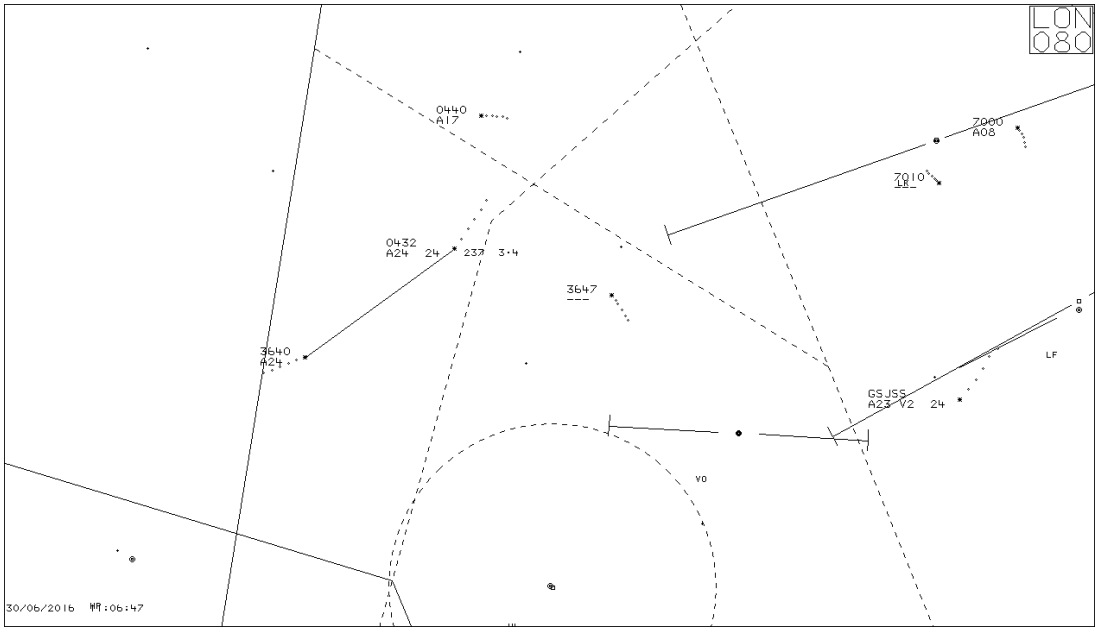


Figure 6: Geometry at 1106:47 (Chinook squawking 3640; PC12 squawking 0432).

At 1107:15 (Figure 7), the Chinook was in a right hand turn and the PC12 also initiated a right hand turn onto a more westerly heading.

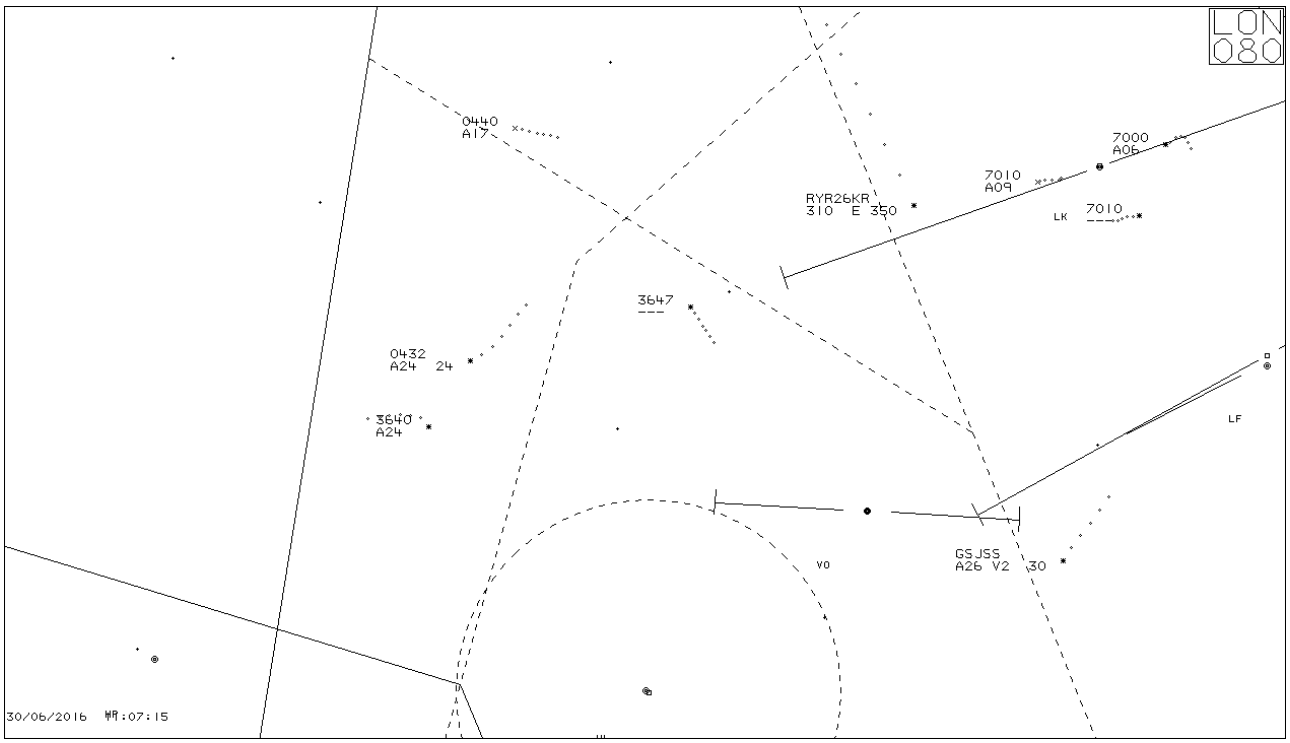


Figure 7: Geometry at 1107:15 (Chinook squawking 3640; PC12 squawking 0432).

At 1107:50 (Figure 8), the PC12 again changes course, turning left onto a more southerly heading back towards the Chinook. The controller recognises this and stops the turn of the Chinook at 180°; it is evident from the replay that the Chinook has already turned through 180°.

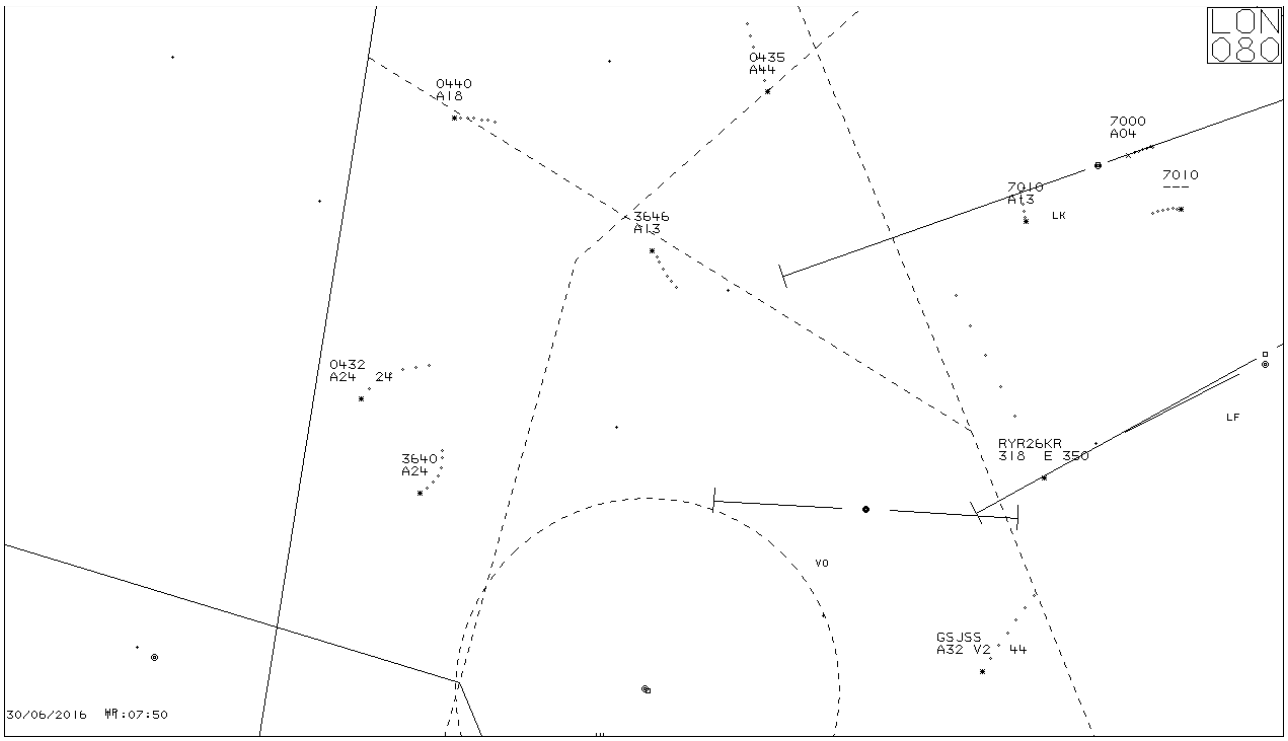


Figure 8: Geometry at 1107:50 (Chinook squawking 3640; PC 12 squawking 0432).

At 1108:05 (Figure 9), the Chinook pilot saw the PC12 visually and, to avoid going into cloud, continued a right hand turn.

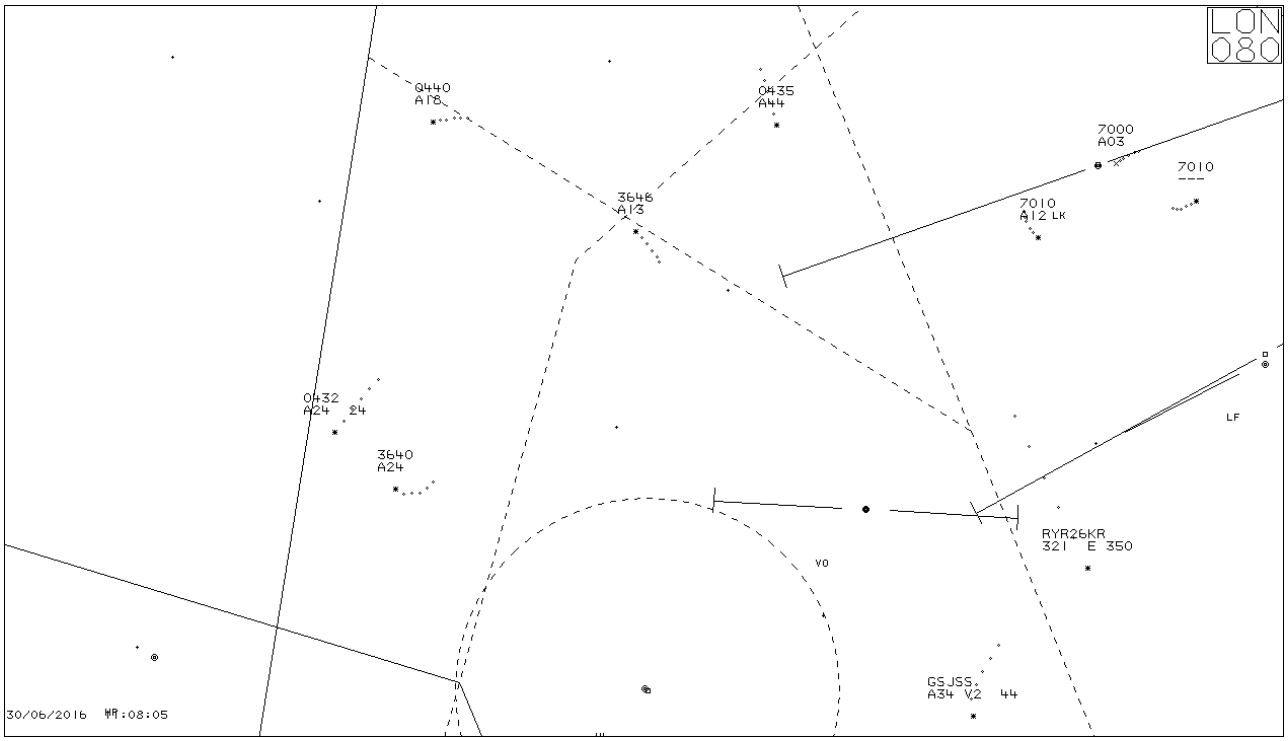


Figure 9: Geometry at 1108:05 (Chinook squawking 3640; PC12 squawking 0432).

The Chinook pilot reported being under radar vectors for a PAR to RAF Odiham in a broken cloud layer (2000ft QFE) switching between VMC and IMC and reported being given Traffic Information and not being visual. The pilot reported being in a left hand turn (holding as instructed) whilst intermittent VMC; the radar replay shows a right hand turn is initiated and this corresponds with the instruction given in the tape transcript. The pilot reports acquiring the PC12 in the 2 o'clock position whilst in the turn.

The Odiham controller reported that the Chinook was operating on an air test under a Basic Service 15nm to the west of Odiham. Once complete, the pilot requested a Traffic Service and an IFR pick-up for PAR. The controller, as per procedure[1], informed Farnborough ATC of the approach to RW09 at Odiham. The controller reported that, as the Chinook approached 10nm finals, they called traffic in the aircraft's left 10 o'clock at 3nm and similar height. The pilot reported 'not visual'; with 1.5nm separation the controller instructed the Chinook to make a right-hand orbit to avoid the confliction. The controller reported re-calling the traffic to the Chinook whilst it was in the orbit and, as the Chinook was half way through, the conflicting traffic changed its track. The change of track put the aircraft back into confliction, so the controller stopped the Chinook's turn, and shortly afterwards the Chinook pilot reported visual.

The Odiham controller made the decision to turn the Chinook away from its approach path due to the conflicting traffic at the same height. Traffic Information and the controller's action to resolve the confliction were effective barriers. Without further information from the PC12 pilot, and having not seen the ATSI investigation, it is difficult to explore the investigation to further depth.

Discussion with Odiham ATC personnel highlighted a positive relationship with Farnborough but with some differing views on control in local Class G airspace and aircraft control responsibility. This highlighted an area of concern from a Mil BM safety perspective; however, regular meetings take place and should allow for discussion on this topic.

[1] RAF Odiham Air Traffic Control Order book 3.4 Para 6. TI is to be passed to FBO at the earliest opportunity. The aircraft does not need to be positively identified to FBO.

UKAB Secretariat

The Chinook and PC12 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[2]. If the incident geometry is considered as converging then the Chinook pilot was required to give way to the PC12[3].

Comments

JHC

Whilst this Chinook was not a JHC asset at the time of the incident, JHC has the following observations:

1. Traffic Information on the PC12 was not given to the Chinook pilot until it was 2 miles away.
2. A left-hand turn for the Chinook would perhaps have been a more appropriate action until clear of the PC12 rather than a 360° orbit [UKAB note: albeit, as the incident unfolded, this would have also have brought the Chinook into conflict with the PC12 after it had turned onto west].
3. The transcript contains non-standard verbose phraseology by the Odiham controller.

Summary

An Airprox was reported when a Chinook and a PC12 flew into proximity at 1108 on Thursday 30th June 2016. Both pilots were operating under VFR in VMC, although the Chinook pilot reported being intermittent IMC. The Chinook pilot was in receipt of a Traffic Service from Odiham and the PC12 pilot was in receipt of a Basic Service from Farnborough.

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, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board first looked at the actions of the Chinook pilot. He was on an instrument recovery to Odiham and, whilst the avoiding action given by the controller to conduct an orbit was unusual, the Board thought it was entirely reasonable that he had taken the suggested 360° turn, particularly given that he was intermittent IMC. Notwithstanding, despite the controller issuing this avoiding action, members noted that the Chinook pilot was operating under only a Traffic Service, in Class G airspace, where ultimately the pilot remains responsible for his own separation. In the end, having become VMC again, the Chinook pilot saw the PC12 and took his own action to stop his turn and keep the other aircraft in sight.

For his part, the Board noted that PC12 pilot could not remember the event, but the RT transcript indicated that, having been given Traffic Information by Farnborough, he had elected to take action to go behind the Chinook, turning back on track once clear. He would not have known (because the Farnborough controller did not know) that the Odiham controller had coincidentally issued avoiding action to the Chinook, causing it to then come back into proximity with him. However, that he didn't remember the event probably indicated that he wasn't concerned by the proximity of the Chinook at the time.

The Board then turned to the actions of the controllers involved. Some of the controlling members thought that giving the Chinook a 360° turn was not the most appropriate avoiding action because, on the assumption that the PC12 would continue its initial track, an orbit would put the slow-moving Chinook back in the same position it had been without resolving the confliction. Other controller

[2] SERA.3205 Proximity.
[3] SERA.3210 Right-of-way (c)(2) Converging.

members pointed out that a turn of some kind was required to avoid the PC12, and that an orbit would at least fix the Chinook in place geographically as the PC12 had initially looked as if it was going to cross the extended centreline of Odiham's approach lane ahead of the Chinook's position. After some discussion, it was agreed that, although subsequent events had resulted in the Chinook and the PC12 coming back into confliction as they both turned through west, without the benefit of hindsight, the controller could not have known that the PC12 would also turn after he had given the Chinook pilot the orbit. Noting also that the Odiham controller had then re-assessed the situation and had updated his plan by asking the Chinook pilot to stop his turn, they agreed that, in the face of a changing situation, the Odiham controller had done his best to ensure that the Chinook pilot remained clear of the PC12. The Board also thought that the Farnborough controller did all that could have been expected of him, giving good Traffic Information even though the PC12 was on only a Basic Service. Members noted that, ultimately, neither controller was required to give any avoiding action given that the aircraft involved were operating under only Traffic and Basic Services.

Notwithstanding, it was noted that liaison between the two ATC units had broken down in that the Odiham controller had passed information to the Farnborough assistant that the Odiham radar pattern was active and could reasonably have expected that Farnborough would route aircraft clear in accordance with the letter of agreement. That being said, controller members also opined that he could see the PC12 on his radar, and there was nothing to prevent him calling the Farnborough controller to eliminate any doubt about his intentions. Had he done so, the two controllers could have agreed a cause of action that would have removed any ambiguity about who was taking the avoiding action. For his part, the Farnborough Controller was not passed the information that the Odiham pattern was active from the radar assistant, and it was only when he saw the radar track of the Chinook that he realised it was probably in the instrument pattern. Nevertheless, he could also have initiated a call to the Odiham controller to let him know that he would route the PC12 to avoid the instrument pattern. It was clear to the Board that, somewhere along the line, the liaison procedure between the 2 units had broken down, and the Board resolved to make a recommendation that both Farnborough and Odiham review this procedure.

In assessing the barriers that were available in this incident, the Board first noted that the ATS procedure between the two ATC units had broken down and, although the MATZ still existed for protection, they therefore assessed that airspace design and procedures were only partially effective. They also thought that ATC actions in identifying and resolving the confliction were only partially effective given that liaison between the 2 controllers had not been effectively conducted. However, on the positive side, members noted that the PC12 had received Traffic Information on his TAS and, ultimately, see-and-avoid had been an effective barrier.

The Board then looked at the cause of the Airprox and members quickly agreed that this was that the Chinook pilot had been concerned by the proximity of the PC12. However, they felt that the lack of effective liaison between the Farnborough and Odiham controllers was a contributory factor. The Board then discussed the risk at length. Some members thought that this was a Category C event, in that although timely action had been taken and there was no risk of collision, ATC procedures had not been fully normal or effective. However, notwithstanding that ATC procedures had not been fully effective, others viewed the incident as a non-proximate, benign Class G airspace event where normal safety standards had pertained, and was therefore a Category E incident. In the end, the Chairman called a vote and, by a majority, it was decided that the risk of collision was Category E.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Chinook pilot was concerned by the proximity of the PC12.

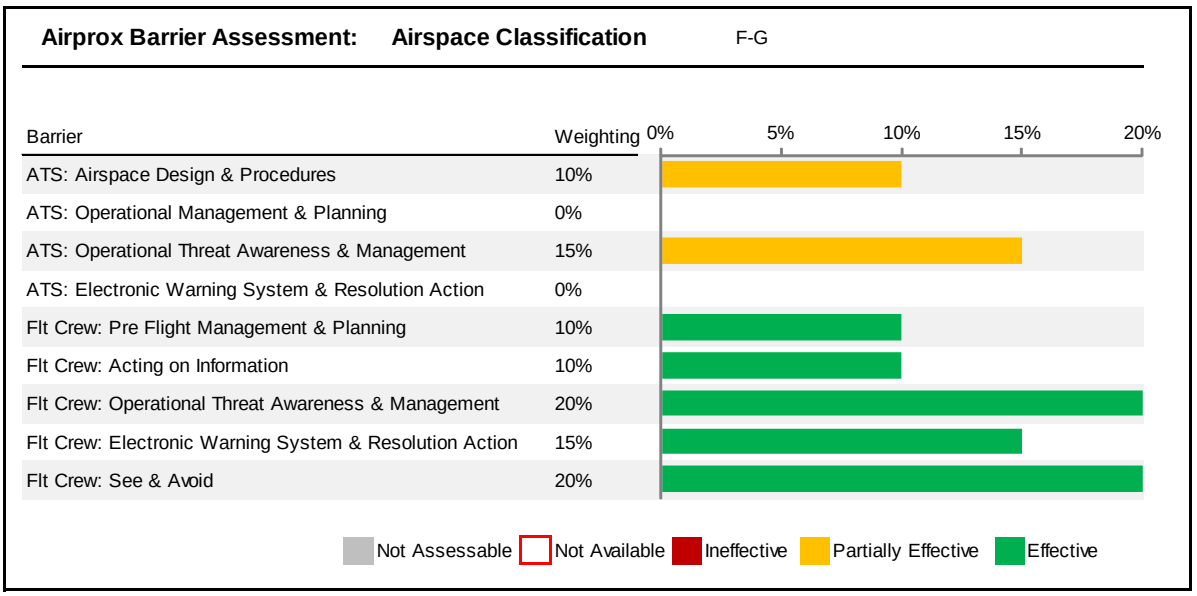
Contributory Factor: Lack of effective liaison between the Farnborough and Odiham controllers.

Degree of Risk: E.

Recommendation: Farnborough and Odiham review the purpose and effectiveness of their current agreement.

Barrier Assessment:

Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the following table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace).[4] The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, Not Available, or Not Assessable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.



[4]] Barrier weighting is subjective and is based on the judgement of a subject matter expert panel of aviators and air traffic controllers who conducted a workshop for the UKAB and CAA on barrier weighting in each designation of airspace.