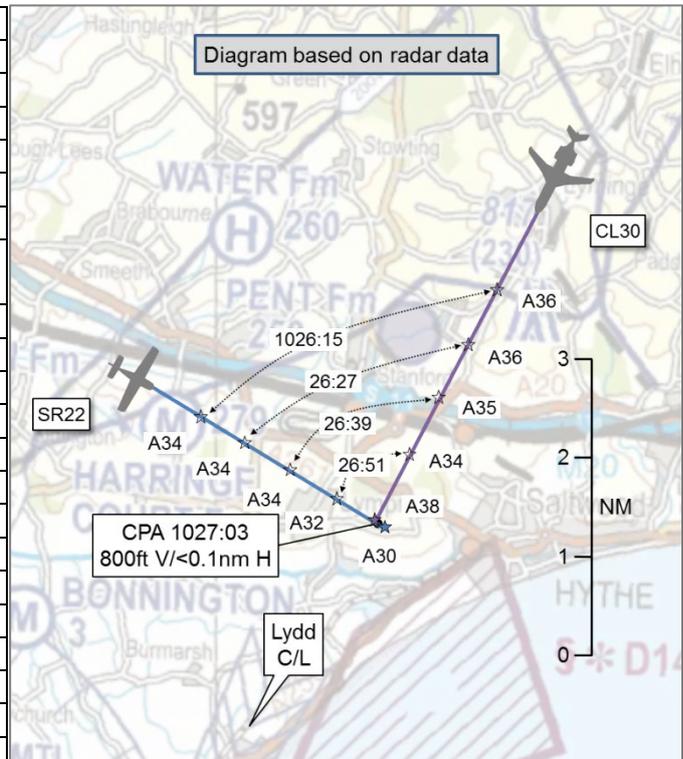


AIRPROX REPORT No 2016224

Date: 20 Sep 2016 Time: 1027Z Position: 5104N 00103E Location: 7.7nm NE Lydd airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	CL30	SR22
Operator	Civ Comm	Civ Pte
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	Basic
Provider	Lydd	London Information
Altitude/FL	3800ft	3000ft
Transponder	A,C,S	A,C,S
Reported		
Colours	NK	NK
Lighting	Strobes, nav	NK
Conditions	IMC	NK
Visibility	Nil	NK
Altitude/FL	3200ft	NK
Altimeter	QNH	NK
Heading	210°	NK
Speed	200kt	NK
ACAS/TAS	TCAS II	TAS?
Alert	RA	Unknown
Separation		
Reported	100ft V/0.5-1nm H (TCAS)	NK
Recorded	800ft V/<0.1nm H	



THE LYDD APPROACH CONTROLLER reports that the CL30 pilot called at 20nm north-east making a direct arrival on the RW21 ILS. At 12nm, the pilot reported that there was an aircraft 300ft below him and the separation was decreasing. At 100ft below he had a TCAS alert (amber) followed by an audible instruction to ‘climb climb’. The CL30 pilot climbed to 3700ft and reported visual with the other aircraft. The aircraft in conflict was not on Lydd’s frequency. A call to the London FIR controller ascertained that they were working the SR22, which was in the same area as the CL30 at the time of the Airprox.

THE BOMBARDIER CHALLENGER 300 (CL30) PILOT reports that they had flown east of DVR and had descended on radar vectors towards Lydd. During the descent towards Lydd, and shortly before descending below Controlled Airspace (CAS), London Control released them to contact Lydd Approach. Illustrating his report he provided an annotated diagram of their final approach (Figure 1) that he referenced in his textual comments. He stated that Lydd Approach cleared them to continue descent to 3200ft QNH (the final approach altitude), intercept the Localiser ILS RW21 (Figure 1 - Point A), and to descend on the ILS RW21 to perform a ‘break-off’ for a circling approach to RW03. They captured the localiser RW21 while descending to the final approach altitude at approximately D12.0 ILDY at 3500ft QNH (Point B). At that point, they realised that a ‘target’ on their TCAS at two o’clock was entering the 5nm sector at a vertical distance 400ft below, at approximately 3100ft; the ‘target’ was moving east, probably crossing their glide-slope (GS) at approximately D8.3 ILDY (Figure 1 - Point TA). The ‘target’ went amber, and they received a TCAS TA “Traffic”. They immediately informed ATC about the target. ATC responded that they could not see it, because they do not have radar equipment. At approximately D11.0 ILDY, they levelled at 3200ft (Figure 1 - Point C). The target range was approximately 3nm, with a vertical distance of 100ft (Figure 1 - Point TB). Weather

conditions were still IMC in clouds 6/8 to 8/8 [Broken-Overcast]. He spoke to the Second in command, commenting that if the autopilot captured the GS and commenced descent they might cross the target at the same altitude. At D8.5 ILDY, still IMC, the target range was approximately 1nm, with a vertical distance 100ft (Figure 1 - Point TC). The autopilot captured the GS, and immediately afterwards they received a TCAS RA "Climb" (Figure 1 - Point D). By pitching the aircraft up into the green TCAS reference bar and advancing the thrust levers to climb power, they performed a rapid climb-out. At approximately 3700ft, they received a TCAS "Clear of conflict" (Figure 1 - Point E). They rapidly changed configuration to: flaps 20; gear down to initiate descent again. When descending through approximately 3000ft, they were clear of clouds. Now in VMC and with the airport in sight, they decided to land on RW21, since they had a tailwind component of less than 5kt. After landing, he telephoned the Tower to discuss the conflict situation. ATC told him again that they could not identify the target, because they were not equipped with radar and they learned about the conflicting situation and the TCAS RA only through the CL30 pilot's radio call. ATC further told him that they do have conflicting traffic every now and then. The reason for this is that other pilots flying outside CAS and passing through the Lydd area are not obliged to call Lydd ATC to inform them about their intentions, as long as they do not fly through Lydd's ATZ. The CL30 pilot opined that this may lead to potential conflicting situations with other east or westbound traffic, since pilots on the RW21 approach are flying quite a distance through uncontrolled airspace until they reach the Lydd ATZ. He commented that, in his opinion, the conflicting traffic that caused the TCAS RA did not follow the rules of distances to clouds in the specific airspace because the aircraft was flying at approximately 3000ft or 3100ft QNH, according to their [TCAS] indications. They were clear of clouds only when passing 3000ft or lower, and in his opinion the other pilot was flying at least through broken clouds and not keeping a proper vertical distance to clouds.

[UKAB note: The pilot of an aircraft is responsible for determining whether or not the meteorological conditions permit flight in accordance with the Visual Flight Rules. The criteria for determining Visual Meteorological Conditions are: for aircraft flying in Class G airspace at or below 3000ft amsl 'clear of cloud and with the surface in sight, with a visibility of 5km'; for aircraft flying in Class G airspace at 140kt IAS or less the visibility requirement is reduced to 'clear of cloud and with the surface in sight, with a visibility of 1500m'.]

He assessed the risk of collision as 'High'

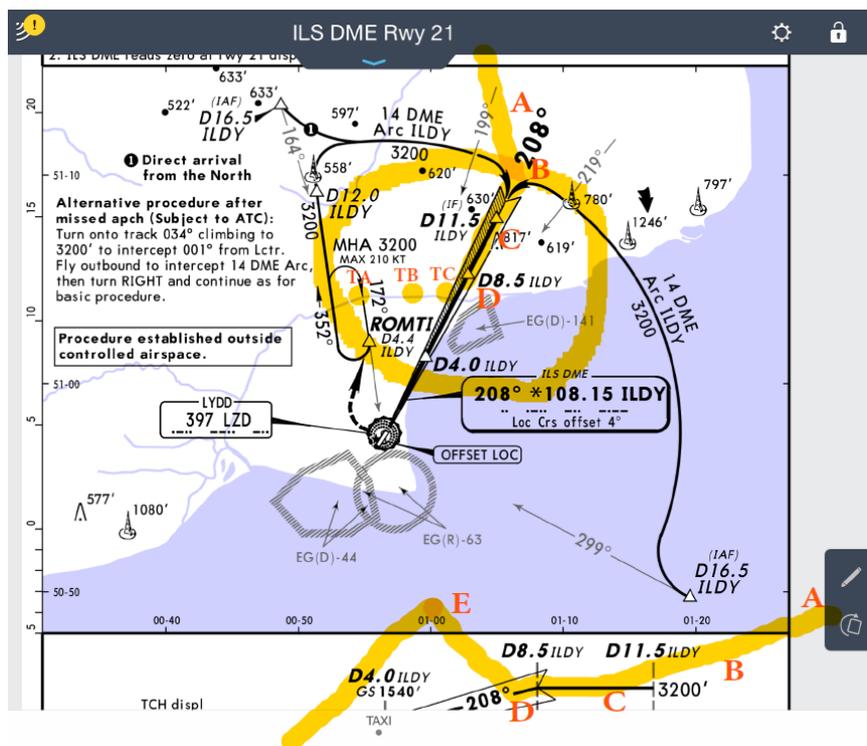


Figure 1 CL30 Reported Flight Path.

THE CIRRUS SR22 PILOT reports that the first time he heard of this incident was on receiving an e-mail on 19th January (some 3 months after the event). He commented that he does this trip often and he did not see or hear about the conflict on R/T. He was probably speaking to London Information and the other pilot would be on Lydd Approach/Tower depending on whether he was just established or fully established; consequently, they would not have been able to listen to each other. He understood that the other aircraft was at 3800ft, and he himself was transiting underneath at 3000ft heading south. The Cirrus has a form of TCAS for making him aware of traffic and this likely would have showed at 800ft above, which would not have been an immediate threat to both parties. He did not recall if the indicator was showing a decent of the other aircraft so he could not comment. He was not 100% sure where the incident was reported to be, but presumed that the other aircraft was on approach to RW21. Traditionally he remains with London to their FIR, normally transiting the Lydd overhead, thus avoiding any VFR traffic landing or aircraft on the instrument approach. He understood that the Airprox was 12nm from the airport. He opined that the CL30 pilot would not have started his decent until 8.5D; however, he did appreciate that he could have been as low as 3200ft up to 11.5D. He added that he will always try to make courtesy calls on Box 2, especially when passing near an instrument approach.

THE LONDON INFORMATION FISO reports that at 1021 the SR22 pilot called him on the London FIS East frequency requesting a Basic Service. The pilot reported being north of Headcorn at 3400ft on QNH 1021hPa enroute from to Le Touquet requesting a Basic Service. He asked the pilot to squawk 1177 with Mode C and advised that they were now in receipt of a Basic Service. He asked the pilot his intended routeing and he advised him that the intended routeing was Sandy-Sovat. He then passed the London QNH and asked him to report 'coasting out'. He glanced at Sandy and Sovat on the chart and could see that at 3400ft this routeing would keep the aircraft outside CAS and Danger Areas. He was then involved in a number of telephone calls, whilst also passing and receiving a number of estimates on other aircraft that he was working or about to work. At some point the SR22 pilot reported that they had passed Sandy and gave an estimate for Sovat of 10.35. At 10.32 he suggested that the SR22 pilot could free-call Le Touquet and squawk 7000. The pilot did not mention any encounter with another aircraft while on the London FIS frequency. He was then relieved by his colleague for a break and, on his return, his colleague advised him that Lydd ATC had telephoned and had advised that an IFR Lydd inbound aircraft had flown close to the SR22, and that its pilot may file an Airprox. He was not aware of this incident while working the SR22.

Factual Background

The weather at Lydd was recorded as follows:

EGMD 201020Z 04010KT 9999 FEW008 18/15 Q1020=

Analysis and Investigation

CAA ATSI

ATSI had access to reports from both pilots, the Lydd Approach controller, the London FIR Flight Information Service Officer (FISO) and the NATS Unit Investigation Report. ATSI also had area radar recordings and the R/T recordings from both Lydd Approach and London FIR. Screenshots in the report are taken from the area radar recording. Levels indicated are altitudes and all times are UTC. The CL30 pilot was on an IFR flight inbound to Lydd, positioning for an ILS approach to RW21 to be followed by a visual manoeuvre to land on RW03. The pilot was receiving a Procedural Service from Lydd Approach. The SR22 pilot was on a VFR flight to Le Touquet, in receipt of a Basic Service from London Flight Information.

The SR22 pilot contacted London Information at 1007:55 and was advised to obtain a radar service from Farnborough LARS for his transit to the east of the London TMA. He returned to London Information at 1020:32 and a Basic Service was agreed. At 1021:00 the pilot reported abeam Headcorn at 3400ft, advising the London FISO that they expected to coast-out at (reporting point) SANDY at 1027 (Figure 2).

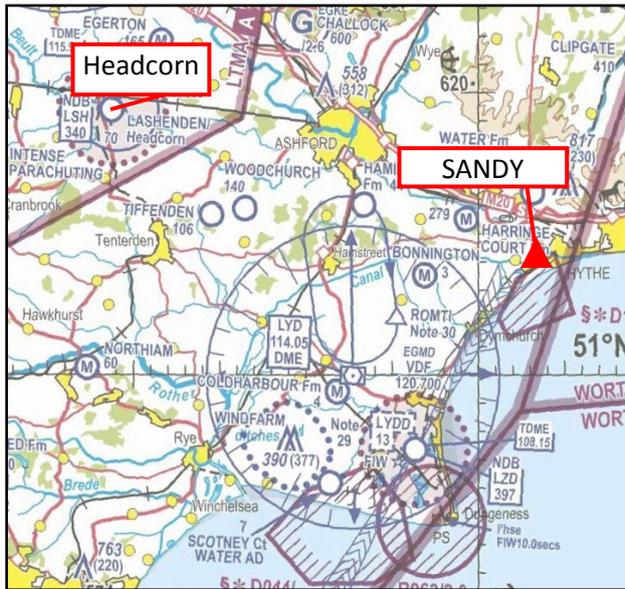


Figure 2.

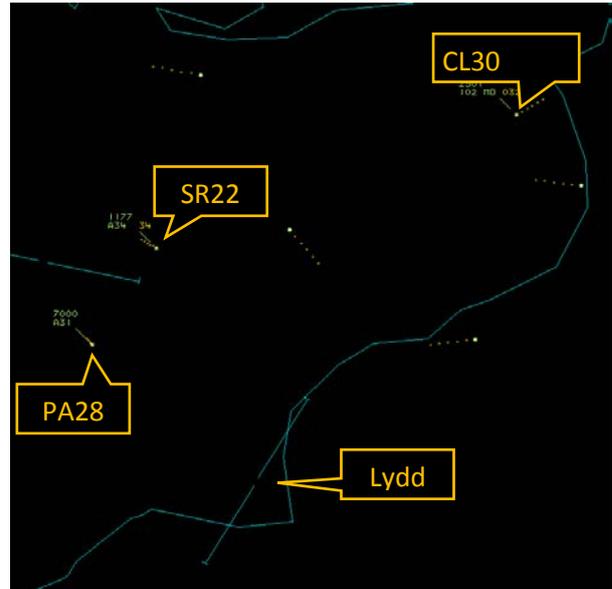


Figure 3 – Swanwick MRT 1023:08.

At 1022:40 the Lydd controller (who was providing both an Aerodrome and non-surveillance Procedural Approach service), passed Traffic Information on the inbound CL30 to a PA28 pilot, who was 6nm south-west of the SR22, on a similar south-easterly track, and which was routing via the LYD VOR. At 1023:08 the CL30 pilot, (approaching 24nm north-east of Lydd), contacted Lydd Approach advising that they were in the descent to 3200ft (Figure 3).

The Lydd controller confirmed that the CL30 pilot had the latest airfield information, advised them that it was a Procedural Service, and cleared the aircraft for the ILS approach to RW21. The controller requested that they report established on the localiser and/or at 12nm and assigned the Lydd Approach IFR conspicuity transponder code 7067.

At 1024:05 the Lydd controller requested a range-check from the CL30 pilot, who reported at 20nm and, shortly afterwards, confirmed that they were established on the localiser. The controller again requested that the pilot call at 12nm which was acknowledged by the pilot (see Figure 4).

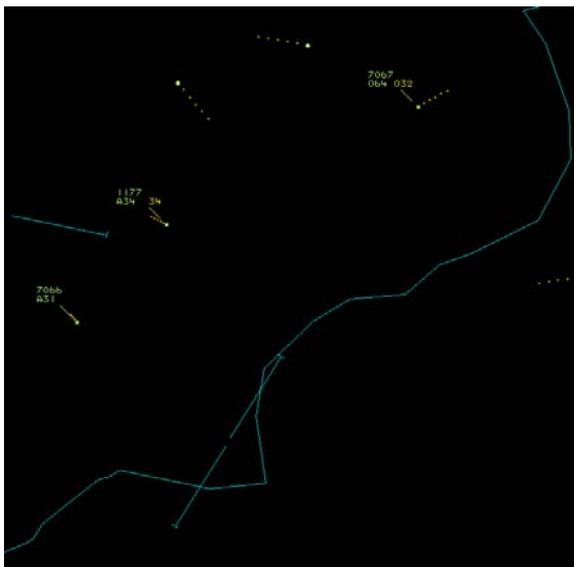


Figure 4 – Swanwick MRT 1024:05.

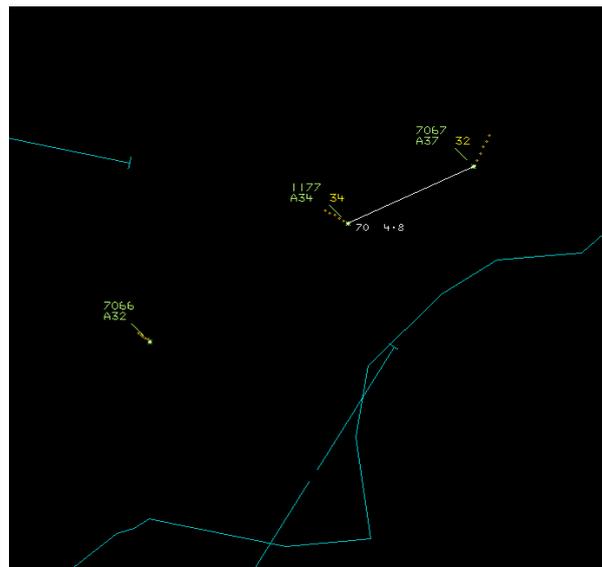


Figure 5 – Swanwick MRT 1025:55.

At 1025:55 the CL30 pilot reported at 12nm. The Lydd controller requested a further check at 4nm, advising the pilot to expect a break to the right to visually manoeuvre for landing on RW03 (Figure 5).

At 1026:22 the CL30 pilot reported a target in their 1 o'clock position, 200ft below. The Lydd controller acknowledged this and advised that they had a PA28 routing to the 'LYD' (VOR) at 3000ft but the pilot had not reported there yet. The CL30 pilot reported that the traffic was now 100ft below them and the Lydd controller confirmed that they were not working any other traffic (Figure 6).



Figure 6 – Swanwick MRT 1026:22.

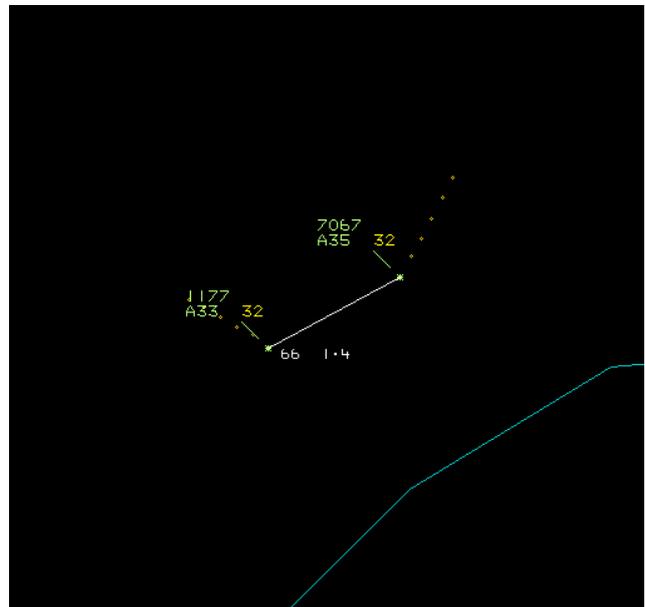


Figure 7 – Swanwick MRT 1026:45.

At 1026:45 the CL30 pilot reported a TCAS TA. The Lydd controller asked if they were visual with the traffic, to which the CL30 pilot reported that they were not (Figure 7).

At 1027:00 the PA28 pilot confirmed that they were still 2.5nm north-west of LYD.

The CPA took place at 1027:03. The CL30 was observed to already be in a climb, with a separation of 800ft vertically and less than 0.1nm laterally (Figure 8).

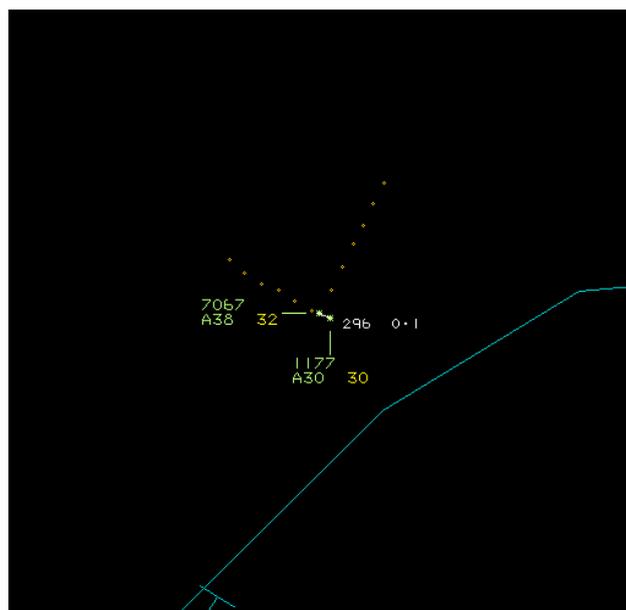


Figure 8 – Swanwick MRT 1027:03.

The CL30 pilot reported clear of conflict at 1027:10, and requested and was cleared to recommence descent at 1027:20. The pilot subsequently requested to land on RW21 which was approved.

The SR22 pilot reported coasting-out at SANDY with London FIR and was transferred to Le Touquet at 1032:30. The pilot of the SR22 made no reference to having seen another aircraft to the London FISO.

The report from the pilot of the CL30 indicated that they had been receiving a 'Surveillance Service' until shortly before descending below CAS and then transferred to Lydd. When they reported the TCAS target to Lydd, they stated that Lydd advised them that they could not see it because they did not have radar equipment. The Lydd controller actually did not mention lack of radar, but rather, that apart from the PA28, they were not working any other traffic. In the subsequent telephone call between the pilot of the CL30 and the Lydd controller, the pilot asked if the controller had seen the traffic, and it was then that the controller reminded the pilot that Lydd did not have a radar.

The SR22 report was filed retrospectively and the pilot appeared not to recall any confliction. His planned (and actual) track took him close-to but not through the Lydd localiser as displayed on the Aeronautical Chart ICAO 1:500,000. The pilot stated that he flew the route on frequent occasions and normally routed through the Lydd overhead, although he did not say if they would normally contact Lydd for this transit.

The Lydd controller telephoned London FIR some 20 minutes after the event but there had been a change of FISO. That conversation with the new FISO appeared to indicate that if they had seen the Lydd IFR conspicuity transponder code, they might have been able to pass Traffic Information to the SR22, as they have a Flight Information Display (FID) which is able to display those aircraft with a serviceable transponder. (However, see below).

Use of the FID is described within the London Area Control MATS Part 2 which states:

'The FID is available to assist LAC FISOs in the reduction and prevention of airspace infringements by aircraft in receipt of a LAC Basic ATSOCAS.'

'Use of the FID is optional and the FISO may use the FID to aid situational awareness.'

Also:

'Aircraft in receipt of a LAC Basic ATSOCAS shall be passed Potential Collision Hazard (PCH) information using only information derived from the pilot's report(s) and annotated on the FIS flight strip. In the FISO R/T exchange with the pilot, they shall refer only to information provided to them by this means.'

Although the London Area Control MATS 2 specifies:

'Where the FISO observes two or more 1177 codes in close proximity on the FID, the FISO shall pass PCH information based on the pilot's R/T reports only. It remains the pilot's responsibility to maintain a good lookout.'

Nothing within the guidance provided suggests that had the London FISO seen the Lydd IFR conspicuity code, they were permitted to pass Traffic Information to the SR22 pilot.

With regards to the London FIR FISO, in accordance with CAP774 UK Flight Information Services:

*'Controllers and FISOs may provide a Basic Service. Controllers may utilise ATS surveillance system derived information in the provision of a Basic Service. A FISO shall not utilise surveillance-derived data to provide traffic information when providing a Basic Service. The use of surveillance equipment by FISOs for other specific tasks is subject to regulatory approval.'*¹

Also:

¹ CAP774 UK Flight Information Services. Chapter 2, Para 2.2

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

Basic Service relies on the pilot avoiding other traffic, unaided by controllers/ FISOs. It is essential that a pilot receiving this ATS remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.²

With regards to the Lydd Approach controller:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.³

Also:

The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness.⁴

With regards to the pilot of the CL30, CAP774 states:

'A Procedural Service does not require information derived from an ATS surveillance system. Therefore, due to the ability for autonomous flight in Class G airspace, pilots in receipt of a Procedural Service should be aware of the high likelihood of encountering conflicting traffic without warnings being provided by ATC.⁵

Also:

'Under a Procedural Service, the controller has no ability to pass traffic information on any aircraft that he is not in communication with, unless he has been passed traffic information by another ATS unit.⁶

With regards to the pilot of the SR22, CAP774 states:

Pilots flying in the vicinity of aerodromes, ATS routes, or navigational aids where it is known that a Procedural Service is provided, are strongly encouraged to attempt to establish RTF contact with the notified ATS provider.⁷

UKAB Secretariat

The CL30 and SR22 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard⁸. Because the incident geometry is considered as converging then the CL30 pilot was required to give way to the SR22⁹, which he did.

Summary

² CAP774 UK Flight Information Services. Chapter 2, Para 2.1

³ CAP774 UK Flight Information Services. Chapter 5, Para 5.1

⁴ CAP774 UK Flight Information Services. Chapter 5, Para 5.5

⁵ CAP774 UK Flight Information Services. Chapter 5, Para 5.1

⁶ CAP774 UK Flight Information Services. Chapter 5, Para 5.5

⁷ CAP774 UK Flight Information Services. Chapter 5, Para 5.1

⁸ SERA.3205 Proximity.

⁹ SERA.3210 Right-of-way (c)(2) Converging.

An Airprox was reported when a CL30 and an SR22 flew into proximity at 1027 on Tuesday 20th September 2016. The CL30 pilot was inbound to Lydd operating under IFR in IMC, in receipt of a Procedural Service. The SR22 pilot was transiting under VFR north of Lydd, in receipt of a Basic Service from London Flight Information. The CL30 received a TCAS RA and climbed; he reported that he did not see the SR22. The SR22 pilot did not recollect seeing any conflicting traffic. The closest point horizontally was less than 0.1nm, the vertical separation at the time was 800ft.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, the controller and FISO concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

The Board noted that the CL30 pilot was inbound to Lydd on an IFR flight. Lydd airport is situated outside Controlled Airspace (CAS) and is not equipped with radar surveillance. As such, it is primarily for the pilot to ensure that collisions are avoided in what is Class G airspace, aided by the Lydd controller for any other aircraft that are in receipt of a Procedural Service with him. The same Class G principles applied to the SR22 pilot, who was on a VFR flight to France and in receipt of a Basic Service from London Flight Information.

The Board first discussed the actions of the CL30 pilot. He had contacted Lydd when he was approximately 24nm north-east of the airport, reporting descending to 3200ft. Although not informed by Lydd that a radar service was not available due to lack of equipment, he was informed by the Lydd controller that he was in receipt of only a Procedural Service. This service is only provided by ATS units that do not have radar surveillance available, and should have indicated the lack of radar to the pilot. Members commented that the CL30 pilot's report indicated that he had not assimilated that Lydd had no radar, and that he may not have fully appreciated the limitations of the service he was under. Having been cleared for the ILS approach to RW21, the CL30 pilot's intention was to carry out the ILS approach to RW21 and then to perform a circling approach to RW03. Having detected the SR22 on his TCAS, the CL30 pilot commented that the aircraft was 100ft below them and this was followed by the CL30 pilot reporting a TCAS TA and confirming that he was not visual with the traffic (he reported he was in IMC at the time.) Members commented that at this point the CL30 pilot should have changed his flight path to give way to the SR22, but instead allowed the autopilot to capture the glide-slope and thereafter received a TCAS RA to climb, which he complied with. The Board wondered whether he had not been fully aware of the definition of a Procedural Service and had been expecting a degree of separation from the unknown traffic by ATC. That could explain why he had continued his approach despite being aware from TCAS returns that there was a conflicting aircraft in his vicinity. Board members considered that the comments made by the CL30 pilot in his Airprox report indicated that he had an apparent lack of understanding of the UK FIS and Lydd's ATS capability and this was regarded as a contributory factor.

The Board then turned its attention to the actions of the SR22 pilot. The Board was disappointed that, due to the late notification of the Airprox, he was understandably not able to fully recollect the details of his flight; it would have been particularly useful to ascertain whether he had received any warnings from his ACAS equipment. [UKAB Note: CAA ATSI, MOD RAC and UKAB processes have since been reviewed to ensure that more timely notifications are made to those involved in Airprox incidents]. The Board considered that because the SR22 pilot was routeing close to an instrument approach, it would probably have been prudent for him to have contacted Lydd when he was in its vicinity rather than remain solely with London FIS; on this occasion it would have allowed ATC to warn both pilots of each other's presence. In this respect, the Board was pleased to note his reported comments about making courtesy calls on Box 2 when passing near an instrument approach, and wholeheartedly encouraged him to do so in future. Finally, the Board noted that, at CPA, the SR22 was at 3000ft, 100ft below the CL30 whose pilot reported he had been in cloud at the time. Although recognising that the SR22 pilot could operate at 3000ft in accordance with VMC by simply remaining clear of cloud and in sight of the surface, members considered that he was somewhat ill-advised to fly so close to the apparent cloudbase, especially in the vicinity of an instrument approach.

The Board then looked at the barriers that were relevant to this Airprox and decided that the following were key contributory factors:

- **Flight Crew Pre-Flight Planning** was considered to be **ineffective** because the CL30 pilot seemed to have an apparent lack of understanding of the UK FIS and Lydd's ATS capabilities - the Board believed that although he was in receipt of a Procedural Service he still believed that Lydd was equipped with radar surveillance and would keep him advised of, or separated from, traffic not on the Lydd frequency
- **Flight Crew Situational Awareness** was considered to be **ineffective** because the CL30 pilot did not expect aircraft to be in his vicinity without being in contact with Lydd, and neither pilot was aware of the other because the SR22 pilot was not on the Lydd frequency.
- **Onboard Warning/Collision Avoidance Equipment** was assessed as only **partially effective** because the CL30 pilot continued his approach despite being aware of unknown traffic ahead on his TCAS display.
- **See and Avoid** was only **partially available** because only the SR22 pilot was clear of cloud. Accordingly, it was assessed as being **ineffective** overall because neither pilot was able to see the other aircraft.

The Board then turned its attention to the cause of the Airprox. Noting that the CL30 pilot was required to give way to the SR22, and that the CL30 pilot was aware of the SR22 from his TCAS display, the Board considered that the Airprox had occurred because the CL30 pilot had continued his approach towards the SR22, even though he knew that an aircraft was on a conflicting track from his right. Consequently, the Board agreed that the cause of the Airprox was that the CL30 pilot had flown into conflict with the SR22. As to the risk, members noted that the CL30 pilot had received a TCAS RA and had climbed. By the time he had passed the SR22, vertical separation had increased to 800ft, thereby removing the possibility of a collision. Accordingly, the Airprox was assessed as risk Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	The CL30 pilot flew into conflict with the SR22.
<u>Contributory Factor:</u>	The CL30 pilot's apparent lack of understanding of the UK FIS and Lydd's ATS capability.
<u>Degree of Risk:</u>	C.
<u>Barrier Assessment¹⁰:</u>	

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).¹¹ 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, or Unassessed/Inapplicable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.

¹⁰ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#)

¹¹ 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.

