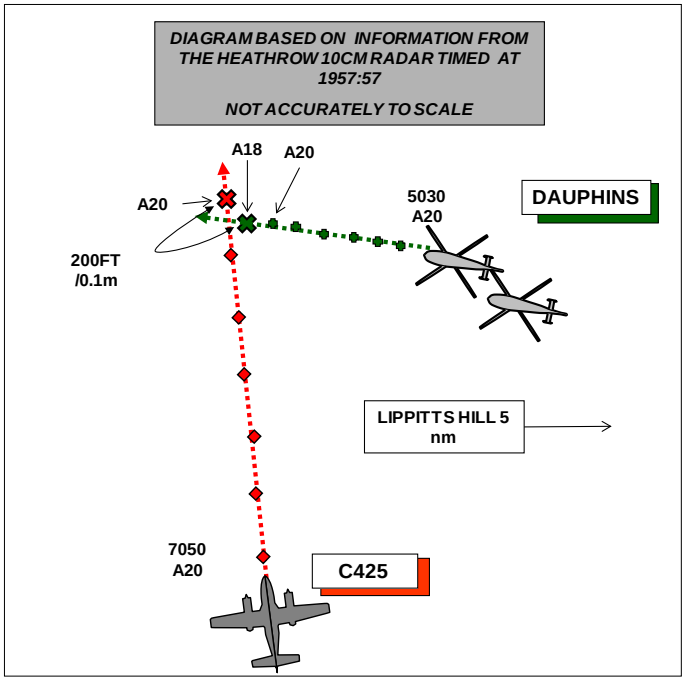
AIRPROX REPORT No 2011166

Date/Time:	5 Dec 2011 1958Z (Night)	
Position:	5140N 00007W (5nm W of Lippitts Hill)	
Airspace:	Lon FIR	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	Dauphin X 2	C425
Operator:	HQ JHC	Civ Exec
Alt/FL:	2000ft Lon QNH	NR
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	NR
Reported Separation:	NR V/0 H	NR
Recorded Separation:	200ft/0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DAUPHIN PILOT reports that he was leading a pair of helicopters that had departed Lippitts Hill heading 270° en-route under VFR to the South Coast for a routine exercise. They were in fairly close line-astern formation with No2 slightly offset to the left, flying with the leader displaying reduced lighting compliant with NVG ops and No2 displaying full lighting as required by the ANO, including nav lights and a beacon. They were squawking with Modes C and S but TCAS was not fitted and were in receipt of a BS from Farnborough North who informed them of a contact in their left 11 o'clock at the same level. The pilots of both ac had visual contact with the ac in their 9 o'clock about 4nm away. The ac closed and both ac had to take major avoiding action by entering an autorotation and a hard bank to the right to avoid a collision; the other ac did not deviate from its track or height.

He reported the incident to Farnborough on the RT and assessed the risk as being high.

THE C425 PILOT reports that he was flying an executive flight solo under IFR from Biggin Hill to Leeds Bradford. He was squawking as directed with Modes C and S and TCAS 1 was fitted. While heading N in the cruise to the E of London under a TS from Thames then Farnborough N as he left CAS, he was advised of conflicting traffic namely 2 helicopters in formation but he could not recall by which unit. He only saw one helicopter and flew above and behind it as it crossed ahead of him from right to left. He was more than 180m [the distance on the radar recording and passed to the pilot by the UKAB] from the helicopter that he saw so he assumes that the [recorded] separation was from the ac that he did not see. He did not receive any TCAS indications.

THE FARNBOROUGH LARS NORTH CONTROLLER reports that at 1953 he was called by the leader of a pair of Dauphin helicopters routeing from Lippitts Hill to a training area near Bournemouth. He gave them a squawk of 5030 and passed the London QNH, 1007hPa. He identified the ac and offered them a BS. About 2min later he saw an ac squawking 7050 leaving the London Control Zone tracking N towards his formation. He considered there to be a risk of collision so he called the traffic to the Dauphins. About 1min later he updated the TI and the leader stated that he was visual with the traffic. Once the tracks had crossed the Dauphin leader stated that his

wingman had to descend to avoid a collision. He called Thames Radar and obtained the details of the ac, which was a C425 en-route from Biggin Hill to Leeds Bradford.

At 2000 he closed the frequency and transferred the Dauphins to Farnborough LARS West.

The Dauphin pilot rang the following morning to say that he was filing an Airprox report.

UKAB Note (1): NATS provided a unit investigation report but for brevity it has not been included.

THE THAMES CONTROLLER reports he was requested to submit a report six days after the event.

A C425 departed Biggin Hill squawking 7050; he issued the pilot a clearance to transit the London City CTR via the London Eye not above an alt of 2000ft.

As the ac was leaving the Zone Northbound he issued either a BS or TS, he could not recall which without reference to the recordings. However, he does recall issuing TI with regard to a radar return that he considered to be in conflict, N of the C425 and tracking to the W. As the ac neared the return, he reiterated the TI and at that point the pilot reported visual. He was observed to pass very close to the traffic before going en-route.

Farnborough LARS called the controller shortly after and asked for details, stating that his traffic had to make a turn to avoid.

He did not take any reporting action because, as far as he was aware, he performed the necessary actions required of his role with regard to the passing of appropriate TI with regard to the service being provided, and again as far as he is aware, in this instance, he was not responsible for the pilot's actions outside CAS.

ATSI reports that an Airprox was reported by the lead pilot of a Dauphin, when the ac came into proximity with a C425 to the E of Elstree at alt 2000ft.

The Dauphins departed Lippitts Hill for a VFR flight to the South Coast and were in receipt of a BS from Farnborough LARS North on 132.8MHz. The C425 departed Biggin Hill for an IFR flight to Leeds Bradford and was initially in receipt of a TS from Thames Radar on 125.325MHz. The Farnborough Controller was providing services in the Farnborough LARS North area of responsibility and the position was closed after the Dauphin was transferred to LARS West; the controller reported that he was using the Heathrow 10cm radar.

The Thames controller was operating using Swanwick Multi Radar Tracking (MRT) surveillance data (verified by replay of the 'slave' picture). Services were being provided to ac within and around the London and London City CTRs.

On 5 December 2011 sunset was 1553. Meteorological information for airfields in the vicinity of the incident was:

METAR EGLC 051950Z 25011KT CAVOK 05/01 Q1007=
METAR EGLL 051950Z 27013KT CAVOK 05/01 Q1007 NOSIG=

The C425 departed Biggin Hill at 1949 and the pilot called Thames Radar at 1950:20; the ac was identified and issued a transit clearance for the London City CTR. A TS was assigned while outside CAS and a RCS assigned while inside the London City CTR; the [London] QNH 1007hPa was passed and read-back.

At 1952:40 the lead Dauphin pilot called Farnborough LARS North when the ac were approximately 1nm N of Lippitts Hill and Swanwick MRT surveillance replay shows the two ac as two distinct primary targets with associated Mode A and Mode C readouts. A BS was assigned and the QNH 1007hPa passed and read-back.

At 1953:30 the Mode A code of the lead Dauphin changed to that assigned by the Farnborough controller: 5030; thereafter, the Farnborough controller requested that the second Dauphin to squawk standby; at 1954:23 the SSR of the second Dauphin disappeared and both position indication symbols became resolved as one target, associated with the lead Dauphin's SSR information.

The Dauphin's SSR indicated that the ac had climbed to alt 2000ft and, at 1955:10, the pilot reported, "*we're gonna adjust to two thousand two hundred one zero zero seven as once we clear the zone it'll keep us out of the night region"* and the Farnborough Controller acknowledged. The Dauphin was 10nm E of Elstree aerodrome in Class G uncontrolled airspace, underneath the London TMA, the base of which in that area is 2500ft.

The second Dauphin's SSR then began to show again on the MRT replay and, at 1955:40, the Farnborough controller reported this to the lead Dauphin pilot. By 1956:00 the position indication symbols of the two ac had amalgamated as one and were associated with the lead Dauphin's SSR information.

The C425 exited the London City CTA at 1956:15 and was Northbound maintaining alt 1900ft. The C425 was 5.3nm south-southwest of the lead Dauphin which was westbound at alt 2000ft.

At 1957:00, immediately after dealing with another ac, the Thames Controller passed TI to the C425, *"…you've left controlled airspace look out for traffic coming into your right one o'clock right to left same alt westbound",* the pilot acknowledged the TI and was then instructed, *"not above 2400 feet traffic service"* and this was read-back by the pilot.

The Farnborough Controller passed TI to the Dauphin flight, *"traffic… south of you* [1957:10] *two miles northbound similar alt";* the C425 was in the Dauphin's 10 o'clock at a range of 2.4nm, both ac an alt of 2000ft. As later reported, the Farnborough controller considered that there was a risk of collision.

At 1957:25 the lead Dauphin pilot called visual with the traffic; at that time the C425 was at a range of 1.6nm, same relative bearing at alt 1900ft while the Dauphin was at 2000ft. The Thames Controller passed updated TI to the C425 at 1957:37 and asked the pilot if visual and he replied affirm; both ac were displaying a Mode C converted alt of 2000ft.

At 1957:54 the ac were 7nm E of Elstree with the C425 was in the Dauphin's 11 o'clock at a range of 0.2nm, crossing left to right; the C425 was at 2100ft and the Dauphin at 2000ft (see Figure 1).

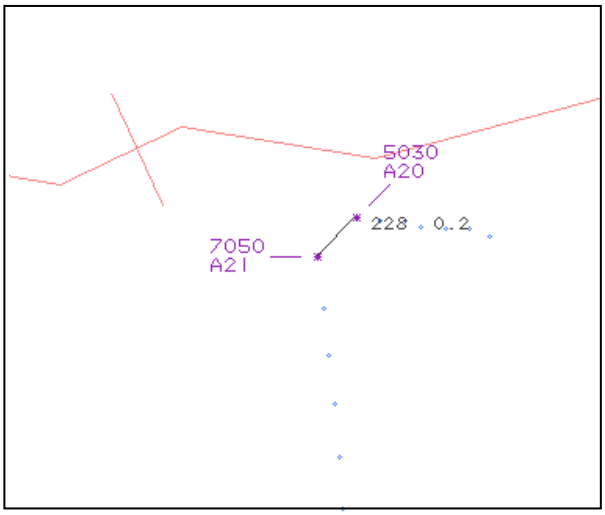


Figure 1: Swanwick MRT at 1957:54

The C425 crossed through the Dauphin's 12 o'clock, left to right, at 1957:58. The C425 was at 2100ft, 0.1nm ahead of the Dauphin, which was at 1900ft (see Figure 2).

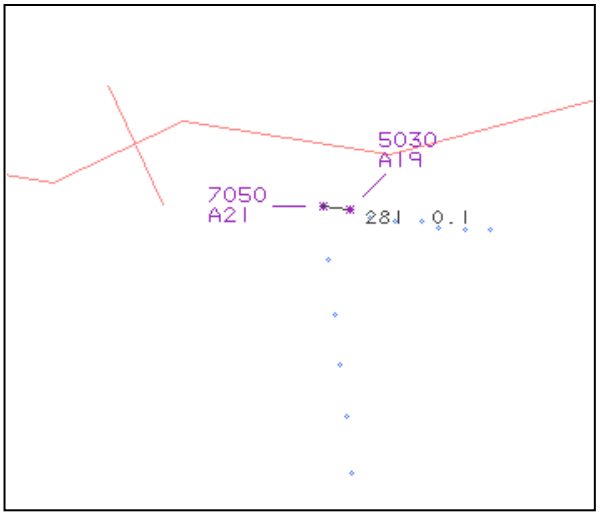


Figure 2: Swanwick MRT at 1957:58

The next update of the MRT replay, at 1958:02, showed the C425 in the Dauphin's 3 o'clock, range 0.2nm (see Figure 3).

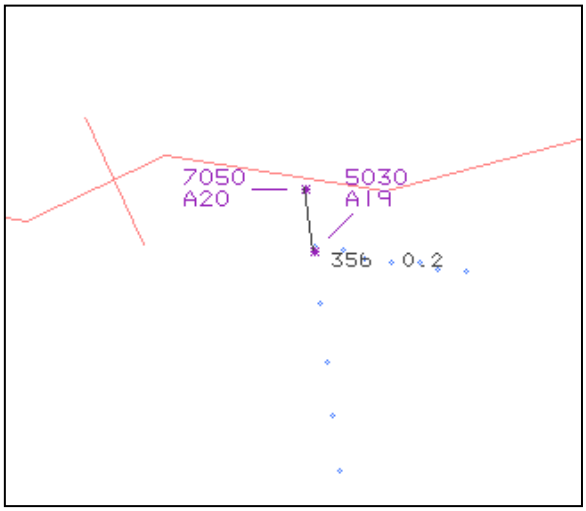


Figure 3: Swanwick MRT at 1958:02

At 1958:20 the Thames controller terminated the service to the C425 and the pilot was instructed to freecall Luton Radar; at the same time, the Dauphin pilot reported to Farnborough, *"that er traffic just flew straight across our path".* The Dauphin pilot also reported that the second Dauphin of the pair had had to, "*descend quite dramatically to avoid him".* The Dauphin was then transferred to the Farnborough LARS West frequency.

At 2000 the Farnborough Controller called the Thames Controller, the incident was discussed and details of the ac involved exchanged.

In accordance with the Service Principles for a TS, the Thames Controller provided specific surveillance derived TI to assist the C425 pilot in avoiding other traffic. Under a TS the avoidance of other traffic is ultimately the pilot's responsibility.

The TI provided by the Thames Controller was based upon the surveillance information available i.e. the pair of Dauphins were resolved on the controller's display as a single position indication symbol. There was no information available to the Thames Controller to indicate that the traffic was a pair of ac and there is no requirement upon controllers providing a TS to ascertain the nature of traffic upon which they pass information.

In accordance with the Service Principles of a BS, the Farnborough controller considered that a definite risk of collision existed and therefore issued a warning, in the form of TI, to the Dauphin pilot. Under a BS the pilot remains responsible for collision avoidance at all times.

The encounter took place at night in Class G uncontrolled airspace. The C425 was flying IFR; however, the Rules of Air applicable to IFR flights outside controlled airspace (RoA Rule 34) contain no specific level requirement for an ac flying at the alt chosen by the C425 i.e. 2000ft. The Dauphin reported operating VFR.

Before, during and after the encounter, surveillance evidence shows that neither the C425 nor Dauphin altered their lateral courses. Both pilots reported visual with each other at approximately the same time, 20 to 30sec prior to the CPA. Any vertical manoeuvre executed by the second Dauphin was not seen as the ac's transponder was not transmitting.

The Dauphin pair and the C425 came into close proximity at alt 2000ft when the minimum recorded distance between the C425 and lead Dauphin was 0.1nm and 200ft. TI was provided to both pilots by the Thames and Farnborough Controllers. There was no discernable surveillance evidence to indicate avoidance manoeuvres by either ac but both pilots reported visual.

HQ JHC comments that contrary to the Dauphin's pilots opening statement, both of the Dauphins were apparently displaying normal lighting. That is upper red strobe with navigation light on bright, this is a standard configuration and in accordance with current regulations. The crews were also using Night Vision Goggles (NVG). Even with the use of NVG it would have been difficult identifying an ac against the background of the cultural lighting. This would also apply to the pilot of the C425.

It is disappointing to note that the Dauphin crews were not utilising the benefits of a TS but it is noted that timely TI was given by Farnborough whilst providing a BS. HQ AAC assesses the incident as a 'late sighting by both' and the confliction was resolved by the Lead Dauphin pilot.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

UKAB Note (2): Since the actual geometry at the CPA was unclear, the Board was shown a snapshot of the Stansted 10cm (single source) radar. They were also informed that prior to the CPA, this radar clearly showed the SSR of the trailing Dauphin being switched to standby when the pilot was requested to do so by Farnborough; at the time the ac was just over 240m behind the leader (within the bounds of the SSR accuracy). The Stansted radar also verified the snapshot at Figure 2 above, in that the C425 passed ahead of the lead Dauphin by an estimated 60m and that the lead Dauphin descended by an estimated 200ft as it approached the CPA; the No2 Dauphin did not paint at any time after its SSR was switched to standby. Although the leader reported that he was squawking with Mode S, no Mode S info was seen on the Radar recordings from either ac.

The HQ AAC Advisor informed the Board that he had contacted the Lead pilot to clarify some aspects of the incident. He informed the Board that both helicopters had been displaying full lighting, which includes nav lights and anti-collision beacons. Since the ac were not operating in the UKNLFS or under a NOTAM this lighting regime is considered mandatory; however he opined that the (military) lighting regulations for ac operating VFR and not in the NLFS are unclear, therefore crews comply with the ANO. He also informed Members that the norm is for trailing ac to formate on their lead 3 rotor spans apart (36m) and suggested that, after he switched his SSR to standby, the No 2 Dauphin had been closing to achieve this. He went on to remind Members of the limitations of NVGs, particularly when operating in areas where there is substantial cultural lighting.

Members discussed the ATC services used by both ac. The C425 had just exited CAS (at 1956:15) and had limited time to agree a service and build his SA of other traffic. The pilot had, however, agreed a TS with Thames at 1957:00, over 45sec before the CPA. In addition, he was passed TI on the Dauphins, controller Members agreed, as early as the situation permitted. The Dauphins requested a BS but in reality were passed the same information they would have received had they requested a (more appropriate, Members thought) TS due to the risk of collision perceived by the Farnborough controller. Despite the inadequacy of their NVGs when looking towards the built-up area, this TI enabled the crew to see (reported at 1957:20) the C425 at distance estimated by the pilot to be 4nm (at 1957:20, 2nm on the radar). They monitored the C425 for a short period before initiating a descent which can first be identified on the radar recording at 1957:53.

The Board observed that they had reviewed several incidents where ac left CAS and almost immediately flew into conflict with traffic avoiding it either laterally, vertically or, as in this case both. Members urged caution by pilots and controllers in such circumstances.

Members considered the route and alt selected by the C425. Although quite legally operating IFR at 2000ft, a controller familiar with operating Thames, opined that a slightly higher alt would have been available had it been requested.

The incident took place about 4nm to the N of the London City CTR boundary and under the base of the CTA, which is 2500ft amsl, in Class G airspace where 'see and avoid' pertains. Members noted the under the RoA the Dauphins had right of way being on the C425's right despite that they were operating under VFR and the C425 under IFR.

In assessing the Risk, Members considered the hazards associated with 'see and avoid' at night using NVGs and by eye alone. Despite effective TI and both flights gaining visual contact as early as their circumstances allowed, it was late contact and the C425 pilot only ever saw one of the helicopters. Although the Dauphins had reacted to the C425 crossing their flight path, the lack of action by the C425 pilot and the limited separation at the CPA persuaded Members that normal safety margins had been eroded.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G Airspace resolved by the Dauphin crews.

Degree of Risk: B.