## AIRPROX REPORT No 2011145

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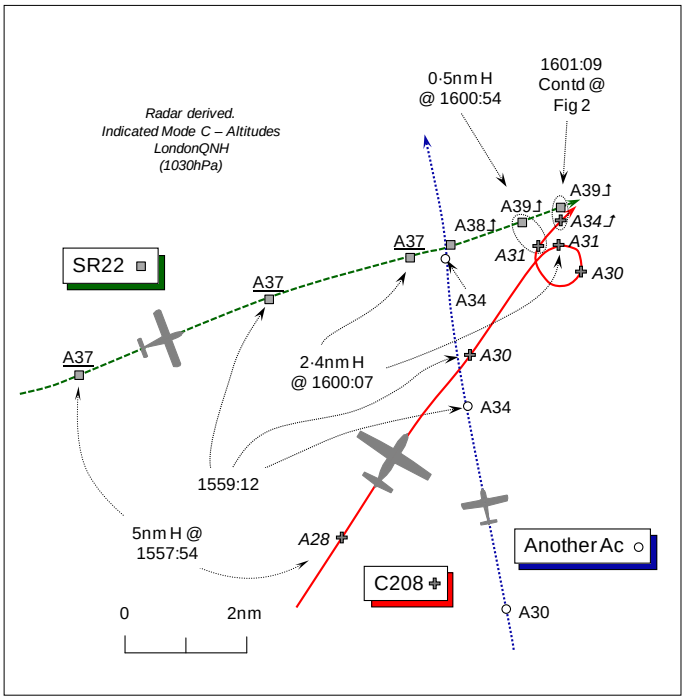
|---|---|---|
| *Date/Time:* | 13 Oct 2011 1601Z | |
| *Position:* | 5216N 00043W (4nm SE of Northampton/Sywell) | |
| *Airspace:* | London FIR | (*Class: G*) |
| *Reporter:* | Cottesmore LARS | |
| | *1st Ac* | *2nd Ac* |
| *Type:* | Cirrus SR22 | C208 |
| *Operator:* | Civ Pte | Civ Pte |
| *Alt/FL:* | 3400ft RPS (1025mb) | 3500ft↑ QNH |
| *Weather:* | VMC CLAC | VMC/IMC CLAC |
| *Visibility:* | 6-8km | >10km |
| *Reported Separation:* | 400ft V/200m H | 500ft V/500ft H |
| *Recorded Separation:* | 200ft Min V/0·1nm Min H see Fig 2 | |




### CONTROLLER REPORTED

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE COTTESMORE LARS CONTROLLER (RAD)** reports that the SR22 pilot had called for a TS passing DTY en-route to Norwich at 3600ft CHATHAM RPS (1025mb). Passing abeam Northampton Sywell heading about 080°, she called two conflicting tracks to the SR22 pilot. The first [the C208] was at R 1 o'clock - 5nm crossing R to L indicating 700ft below the SR22, squawking A0033 but did not look like a parachute dropping profile; the 2nd [another ac] was also crossing R to L at right 2 o'clock 4nm indicating 200ft below she thought, and the SR22 pilot was visual with it. Shortly afterwards she updated TI on the first track at 12 o'clock - 3nm crossing R to L, indicating 600ft below. The SR22 pilot was still not visual and said he would climb a couple of hundred feet. The conflicting C208 then appeared to turn and position beneath the SR22. The traffic was called again to the SR22 pilot 400ft below on a similar heading. As it was 1600UTC, which is the end of the promulgated LARS for the day, she instructed another pilot under service to squawk A7000 and change to his en-route frequency. However, she then returned her attention to the SR22 and saw that it had turned SW'ly and climbed 1000ft – see Fig 2 - so she asked the pilot's intentions. The SR22 pilot reported he had taken avoiding action as the conflicting C208 had climbed to about 200ft below his aeroplane, but he was now descending, back to 3800ft and resuming his course to Norwich. The controller asked if he was filing an Airprox, to which he replied that he wasn't sure and would think about it later on the ground. When the SR22 was clear of the confliction she suggested the pilot could call on the telephone if he wanted any further information and then advised him to switch to his en-route frequency. The Risk was assessed as 'high (A)'; minimum separation was estimated at 200ft vertically, nil horizontally.

The next day the controller was able to contact the SR22 pilot to tell him that she would be submitting an Airprox report irrespective of the pilot's intentions.

**THE CIRRUS SR22 PILOT** reports he had departed from Gloucestershire/Staverton on a VFR flight via DTY to Norwich in fine weather with FEW at 2000ft and SCT at 4000ft. The Airprox occurred 070° DTY 15nm - E of Northampton [4nm SE of Northampton/Sywell A/D] whilst receiving a TS from

Cottesmore LARS on 130·200MHz. His aeroplane is white with black trim; the wing HISLs were on. A squawk of A3721 was selected with Mode C; elementary Mode S and TCAS I are fitted.

Flying in VMC at about 3400ft RPS (1025mb), about 400-500ft above at least broken/near full cover cloud, on autopilot heading 070° at 155kt in reasonable daylight he called Cottesmore RADAR just NE of DTY and obtained a TS. He still felt the radar service would be useful although there was only about 10mins to go before he expected Cottesmore LARS to close. A few minutes later RADAR warned him of nearby traffic 700ft below at 2 o'clock - from memory he believes that this was the first call of traffic. Just prior to this he had picked this traffic up on his basic TCAS I and he could see that the ac was climbing, now very near and looked to be on a collision course from below his aeroplane. Immediately he switched off the autopilot and as a precaution, increased his altitude by 200ft on track and switched on the landing and NAV lights. The unknown ac – the C208 - was almost vertically below him and from the TCAS I display was getting closer. He believes that vertical separation reduced to 300ft and the traffic was still climbing towards him so he applied full or near full power and turned 90° to the R making a climbing turn that was continued for about a further 800ft. Almost at the same time he received a more urgent warning from RADAR and he advised them of the manoeuvre. He continued to look for the traffic during this climbing turn but never saw the C208 at any stage. He levelled at about 4600ft ALT, he thought, continued the turn to regain his original course and spoke briefly to ATC.

The incident seemed more threatening at first because the ac – the C208 - appeared to follow his aeroplane for a short time, which may of course have been entirely coincidental. ATC confirmed that this traffic was no longer a threat and he continued on route to Norwich.

He spoke briefly with the Cottesmore RADAR controller the next morning who advised that she would be filing an Airprox report. Assessing the Risk himself as 'low', he does not think that there was any significant Risk of collision, but if the other ac had not had Mode C switched on and if he had not obtained a short but very useful TS the incident could have been much more serious.

He has an FAA Instrument rating.

**THE C208 PILOT** reports he was en-route on a positioning flight back to Peterborough/Sibson after a parachute dropping flight at Weston-on-the-Green. He had switched en-route from Brize and a squawk of A0033 was selected with Mode C on; Mode S and TCAS I are fitted. Passing E abeam Northampton Sywell heading 050° at 140kt he was in a cruise climb from about 2000ft to 3500/4500ft, above cloud, due to turbulent conditions below the cloud layer. At about 3500ft he was leaving IMC conditions within the cloud layer when TCAS I gave a warning of traffic in the 10:30 position; looking out visual contact was made with the SR22 [the range was not specified]. The SR22 did not appear to be on a converging course so the heading was maintained, he thought, but his ac's climb rate reduced. After about 30secs the SR22 carried out a R turn in an ESE'ly direction passing 500ft above his ac with horizontal separation of 500ft. Visual contact on the SR22 was then lost as he turned eastbound in an attempt to maintain visual contact with the ac. Visual contact was not re-established and the TCAS I indicated that the SR22 was now behind and moving away in an ESE'ly direction. Subsequently, he turned back onto his original heading for Peterborough/Sibson and TCAS gave no further warnings. He assessed the Risk as 'low'.

[UKAB Note 1: In Fig 1 the LAC radar recording shows the SR22 on a steady ENE'ly track indicating 3700ft QNH (1030mb) and converging with the C208, which is ahead at 2 o'clock on a NE'ly course climbing slowly through 2800ft QNH (1025mb) to 3000ft. As the ac close to a range of 2·4nm the C208 turns R into an orbit, rolling out on its original course 0·5nm off the SR22's starboard wing, as the latter, which had already climbed slightly indicates 3900ft, some 800ft above the C208. As the C208 steadies NE'ly at 1601:09, the ac's Mode C indicates a climb through 3400ft in the SR22's 4 o'clock at a range of 0·2nm. Moving to Fig 2, the C208 starts to overhaul the SR22 and climbs to 200ft beneath it; the SR22 then turns R into an orbit climbing at a higher rate through 4400ft with the C208 300ft below indicating 4100ft. At 1601:42, the C208 was at a range of 0.1nm from the SR22 still climbing and turning R, crossing 300ft above and slightly astern of the C208 in between sweeps at the CPA. The C208 commences a L turn but contact is then lost for several sweeps as the SR22

continues the R orbit, ascending to a maximum altitude of 4900ft at 1602:22, when the C208 is shown once more at 4000ft on a NNE'ly course.]

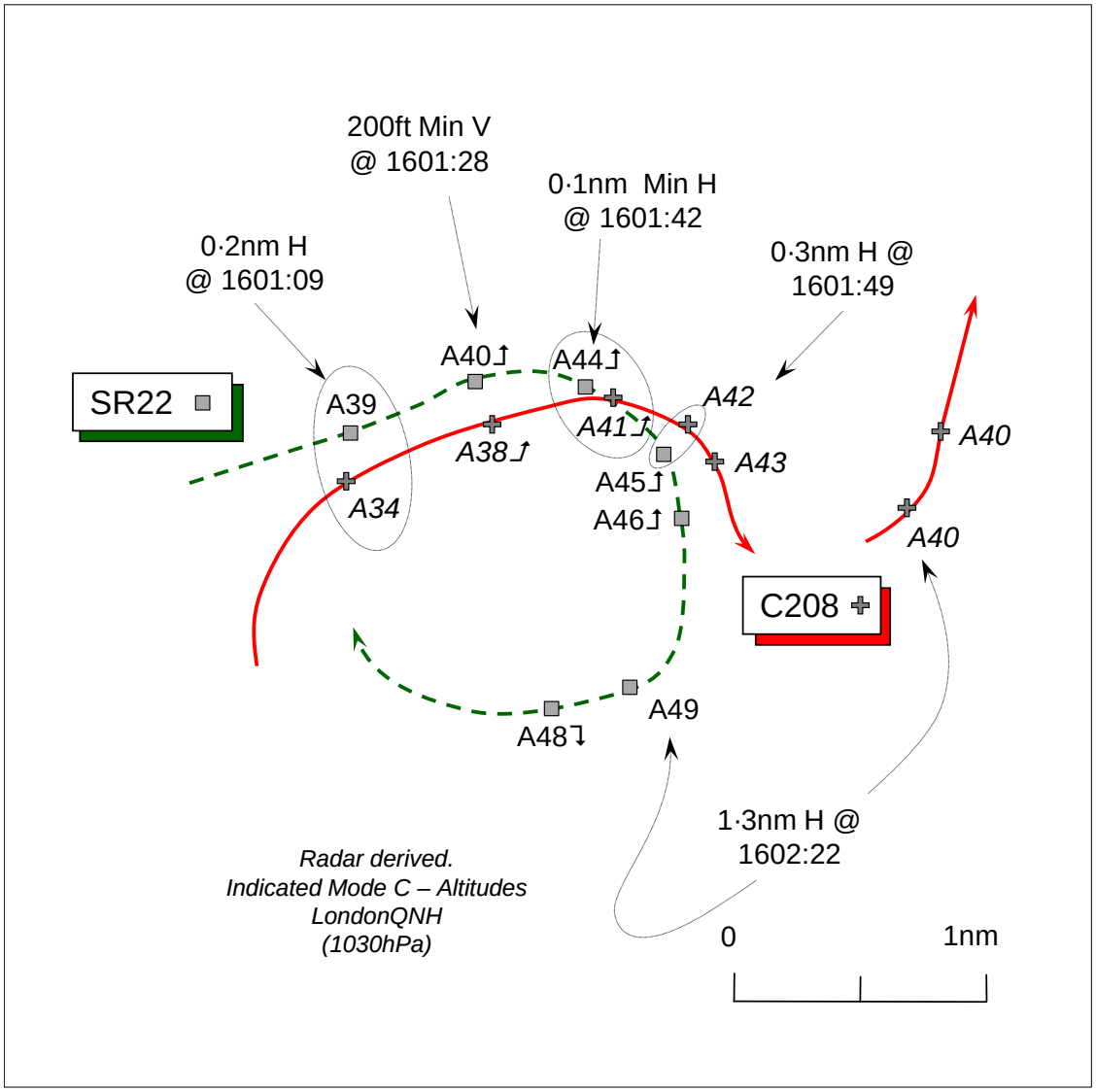



Fig 2

**BM SAFETY MANAGEMENT** reports that this Airprox occurred between a Cirrus SR22 operating VFR in receipt of a TS from Cottesmore RADAR (RAD) and the Cessna 208 in intermittent IMC; both ac were equipped with TCAS I.

RAD described their workload and task complexity at the time of the incident as 'low', with 2 ac on frequency.

At 1555:01, the SR22 pilot called RAD en-route from Gloucester to Norwich at 3600ft, requesting a TS. The SR22 was identified and placed under a reduced TS due to poor radar performance. At this point, the SR22 was 38nm SW of Cottesmore, tracking 075°, with the C208 7.7nm SE of the SR22, tracking 055°, indicating 2400ft. After turning SE'ly at 1556:53, the C208 turned L at 1557:09 onto a track of 045°. At 1557:59, RAD passed accurate TI to the SR22 pilot on the C208, "*traffic right 1 o'clock, 5 miles, crossing right left, indicating 7 hundred feet below*", which was acknowledged. At 1559:10, RAD passed TI to the SR22 pilot on un-related traffic, which the SR22 pilot stated he was visual with. RAD then updated the TI to the SR22 on the C208 at 1559:20, stating "*the first one now in your 12 o'clock* [radar replay shows 1 o'clock] *3 miles, crossing right left, indicating 6 hundred feet below*." Having acknowledged this TI, the SR22 pilot then advised RAD that they were "*going to climb a couple of hundred feet*" reporting that this was a precaution against the C208.

At 1600:01, the C208 commenced a right-hand turn through a full 360° to resume a NE'ly track at about 1600:54. Based upon the C208 pilot's report, the C208 left IMC shortly afterwards at about 1601:02; 0.4nm lateral and 700ft vertical separation existed between the 2 ac. The C208 pilot reported he gained visual contact with the SR22 at this stage and did not believe that the ac were converging. Analysis of the radar replay shows that the 2 ac were converging, albeit slowly.

CAP 774 states that:

> 'the controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

At 1601:17, RAD updated the TI on the C208 to the SR22 pilot stating, "*previously reported traffic is now beneath you* [radar replay shows ac 0.2nm south]*, four hundred feet below, similar heading*."

At 1601:28, as described in the pilot's report, the SR22 commenced a 'full or near full power' climb as separation between the 2 ac reduced to 0.2nm and 200ft vertically. About 4 sec later the C208 turned SE'ly. This accords with the point in the C208 pilot's report that he lost visual contact with the SR22, turning E to 'attempt to maintain visual contact' with the SR22.

The operation of the C208 in IMC without an ATS undermines the principles that underpin CAP 774. Specifically, that when faced with high traffic density, controllers providing a DS will prioritise the separation of known traffic over unknown traffic on the assumption that unknown traffic will be operating VFR and will be able to 'see and avoid.' However, whilst MAA RA 2307 mandates to military aircrew that flight in IMC is only permitted 'when in receipt of a radar or procedural service' except where it is not available or un-obtainable, there is no equivalent civil regulation.

Notwithstanding the restriction to 'see and avoid' induced by the weather, RAD's TI to the SR22 and the respective pilot's assimilation of the information displayed by their TCAS I equipment allowed them to develop their situational awareness and thus take action to resolve this confliction, albeit with reduced safety margins. That aside, whilst RAD provided generally accurate TI and the SR22 pilot did not request additional updates to that TI, BM SM contends that, given RAD's low workload and that the geometry of the event changed markedly between 1559:20 and 1601:17, good practice would suggest that an opportunity existed to provide a further TI update before 1601:17.

BM SM would like to commend RAD for reporting this Airprox, for their work in tracing the SR22 pilot in order to discuss the incident with them and for allaying his concerns over the reporting process.

## PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant RT frequency, radar video recordings, reports from the air traffic controller involved and the appropriate ATC authority.

The Board commended the controller involved for the thorough application of the TS to the SR22 pilot, which overran the regular hours of service for Cottesmore LARS. Furthermore, the Board noted the controller's conscientious approach in tracing and discussing the issues further with the SR22 pilot and for reporting this Airprox. It is important that pilots and controllers alike do not misunderstand the purpose of Airprox reporting and investigation, which is purely a safety investigation that does not apportion blame or form the basis of punitive action.

The BM SM advisor briefed the Board that no record could be found of any ATS provided to the C208 pilot by Brize Norton ATC before the Airprox occurred and that the C208 pilot was not in receipt of an ATS during the period of this encounter with the SR22. Given that the C208 pilot was climbing slowly and had encountered IMC it was surprising that he had not sought a DS, but the LARS

provider in this vicinity was just closing. Notwithstanding that the C208 pilot is entitled to select a squawk of A0033 at his discretion when engaged in para-dropping, the drop at Weston-on-the-Green had been completed and he was positioning back to Peterborough/Sibson. The AIP at ENR 1-6-2 para 2.2.2.1 is quite specific insofar as: '..pilots of transponder equipped aircraft should select Mode A code 0033, together with Mode C pressure altitude reporting…five minutes before the drop commences until the parachutists are estimated to be on the ground.' Here controller Members perceived an inappropriate use of this specific conspicuity code and believed that A7000 was more suitable.

It was evident from the recorded radar data that these two ac were separated horizontally and vertically at the outset, except that the slightly faster SR22 was catching-up the C208 on a converging flight path. The BM SM report shows that this had prompted two transmissions of TI from RAD to the SR22 pilot who was also aware of the C208 from his TCAS I. However, the geometry changed when the C208 turned into a R orbit, with the range decreasing rapidly and the C208 rolling out of the turn just 400yd off the SR22's starboard wing. The Board was aware that TCAS I does not provide consistently reliable and accurate indications in azimuth at close quarters and Members agreed that it was unfortunate that RAD had not updated the reduced range and horizontal situation before the final transmission of TI at 1601:17. From this point, the C208 would have appeared on TCAS to be almost vertically below the SR22 and it was apparent that the SR22 pilot subsequently took positive action to avoid the C208 and increased his rate of climb. This was just after the point of minimum vertical separation of 200ft at 1601:28. Board Members reasoned that it was at 1601:09, just after rolling-out of the R turn and climbing through 3400ft ALT whilst leaving IMC, that the C208 pilot received a warning from his TCAS I and saw the SR22 to port in his 10:30 position just moments before the point of minimum vertical separation. This Airprox illustrated clearly the benefit of even a basic traffic warning system that had enhanced the C208 pilot's SA considerably in IMC and Members noted the SR22 pilot's effective reaction to resolve the conflict. Whilst flying in VMC the SR22 pilot did not see the C208 visually, but nevertheless recognised the developing conflict from the TI provided and climbed at a higher rate than the C208 displayed on his TCAS I, thereby ensuring 300ft separation as he overflew the C208 and turned away to the S into an orbit himself. Unfortunately the C208 pilot lost sight of the SR22 at this point and resumed his easterly course as the SR22 drew astern; by then, however, the conflict was resolved. The Board concluded that this Airprox had resulted from a Conflict in Class G airspace, but in assessing the Risk a pilot Member opined that the C208, by flying in IMC beforehand without a radar service, had raised the Risk level. However, this was a solitary view; the Members agreed overwhelmingly that the SR22 pilot's avoiding action climb based on the initial TI and good SA from his TCAS I data, coupled with the C208 pilot's visual sighting as the SR22 passed above and his own TCAS I assisted SA was sufficient to remove any Risk of a collision.

## PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: C.