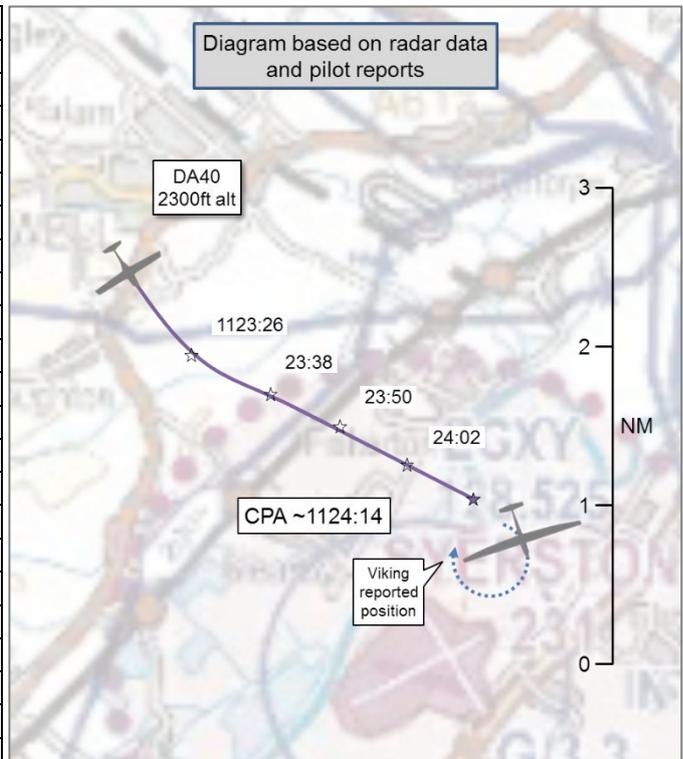


**AIRPROX REPORT No 2019087**

Date: 02 May 2019 Time: 1123Z Position: 5303N 00056W Location: Syerston – elev 231ft

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

| Recorded    | Aircraft 1       | Aircraft 2    |
|-------------|------------------|---------------|
| Aircraft    | Viking           | DA40          |
| Operator    | HQ Air (Trg)     | Civ FW        |
| Airspace    | Syerston ATZ     | London FIR    |
| Class       | G                | G             |
| Rules       | VFR              | VFR           |
| Service     | AGCS             | Basic         |
| Provider    | Syerston         | East Midlands |
| Altitude    | NK               | 2300ft        |
| Transponder | Not fitted       | A, C          |
| Reported    |                  |               |
| Colours     | White, orange    | White, blue   |
| Lighting    | Not fitted       | Strobes       |
| Conditions  | VMC              | VMC           |
| Visibility  | 10km             | 15km          |
| Altitude/FL | 1600ft           | 2500ft        |
| Altimeter   | QFE (1004hPa)    | QNH (NK hPa)  |
| Heading     | 330°             | 165°          |
| Speed       | 75kt             | 125kt         |
| ACAS/TAS    | FLARM            | NK            |
| Alert       | None             | NK            |
| Separation  |                  |               |
| Reported    | 150-200ft V/0m H | Not seen      |
| Recorded    | NK               |               |



**THE VIKING PILOT** reports recovering to RAF Syerston during the descent from a soaring trip. They began a right-hand orbit adjacent to the high-key circuit point for RW29. They began their descent from 2100ft on the Syerston QFE and, when passing 1800ft, broke off the right-hand orbit and continued on a heading of 330° for around 1nm. At that point they carried out a 'pre-lookout' scan and entered another right-hand descending turn to re-join for RW29. At that point the pilot contacted Syerston Radio with a re-join call. After completing approximately 300° of an intended 360° orbit, a GA aircraft was spotted on a collision track in the 12 o'clock position at the same height and at a range of 400ft. To avoid a mid-air collision, the pilot increased AoB to around 60-70° and pitched the nose down. At this point he estimated the light-aircraft passed directly over the top of his aircraft by about 150-200ft. He continued the turn to the right to see an aircraft continuing on a southerly heading, approximately 170°. It was evident that the light-aircraft pilot took no apparent action to avoid a collision and therefore he assumed the pilot of the GA aircraft had not seen his aircraft. After taking avoiding-action, he noted the altimeter was indicated 1600ft on the Syerston QFE 1004. He called Syerston Radio and informed them of the near-miss. The pilot noted that he believed from his position and the proximity of RAF Syerston ATZ that the GA aircraft in question also infringed the RAF Syerston ATZ by an estimated 1nm laterally and 100ft vertically (using Syerston QFE 1004 and East Midlands QNH 1014). The Barnsley RPS at the time of incident was recorded as 1008. The Viking pilot provided a sketch of the incident as he perceived it (Figure 1).



Figure 1  
Viking Pilot's Sketch of the Incident

He assessed the risk of collision as 'Very High'.

**THE DA40 PILOT** reports that he was flying into sun in straight-and- level cruise on a routine flight with autopilot engaged and near perfect VFR conditions. He recalled that he flew to the east of Syerston to avoid the ATZ but he did not see the glider.

**THE EAST MIDLANDS WATCH SUPERVISOR** reports that, following a busy hour in Radar with aircraft weather avoiding, she received a phone call from Syerston airfield enquiring after an aircraft that they claimed had infringed their ATZ and had had an Airprox with one of their aircraft. She was asked if they had been working this infringing aircraft at the time and whether they had any further details. The Watch Supervisor's recollection was that the pilot had called during a busy time and had been initially told to standby. When he was called back, he requested a Basic Service and passed his routeing, callsign and type and that he was at altitude 2300ft. He was passed the East Midlands QNH and put on the conspicuity squawk of 4571 for a Basic Service. Following a review of the tapes and radar replay the aircraft believed to be the DA40 was indicating altitude 2300ft in the vicinity of Syerston and appeared to make an effort to avoid the Syerston ATZ. The radar return did not infringe the video map marker of the ATZ.

## Factual Background

The weather at East Midlands was recorded as follows:

METAR EGNX 021120Z 28014KT 9999 FEW021 FEW030CB BKN036 13/07 Q1013=

## Analysis and Investigation

### UKAB Secretariat

The Viking and DA40 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>1</sup>. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right<sup>2</sup>.

## Comments

### HQ Air Command

The ability to plan to avoid was not available as neither crew had access to CADS. Deconflicting using an ANSP was not possible as each aircraft was working different providers. In addition to this, it appears that the Viking did not show on East Midlands radar. The East Midlands controller wouldn't have been obliged to give traffic or deconfliction advice to the DA40 under a Basic Service, even if the Viking had been seen on radar. The ability to deconflict using an Electronic Warning System appears unavailable, likely due to incompatible systems. It is unclear whether the DA40 was fitted with an Electronic Warning System. The Viking's FLARM would have only declared an alert against another FLARM.

Due to some ambiguity, a discrepancy would appear to exist between the heights (recorded and reported) of each aircraft at CPA. The Viking pilot reported being at 1800ft AGL before CPA and 1600ft AGL (1004 hPa) 'after taking avoiding action', and that the DA40 was initially spotted at the same height and then passed overhead by 150-200ft after avoiding action was taken. The DA40 reported being at 2500ft AMSL and was recorded as being at 2300ft AMSL. If the DA40 pilot was flying on the East Midlands QNH of 1013 hPa (the pressure setting actually used is not known), it is feasible that their aircraft was at 2070ft AGL (1004 hPa) and just above the ATZ. However, it is not possible to conclusively state what the separation actually was with the evidence provided. It is worth noting that the Viking, along with another glider airborne at the time, both assessed the DA40 to be within the Syerston ATZ, both laterally and horizontally. In any case, the DA40 pilot could have afforded the ATZ a wider berth.

<sup>1</sup> SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

<sup>2</sup> SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.

The DA40 pilot's lookout may have been hindered due to flying into sun. The DA40 didn't see the Viking. The Viking pilot spotted the DA40 at an estimated range of 400ft 'on a collision track' and it is fortunate that enough time remained to take avoiding action. This Airprox serves as a reminder that see-and-avoid can be the only remaining barrier to avoiding a MAC and highlights the requirement for a good lookout.

## Summary

An Airprox was reported when a Viking and a DA40 flew into proximity at 1123 UTC on Thursday 2<sup>nd</sup> May 2019 in the vicinity of Syerston. Both pilots were operating under VFR in VMC, the Viking pilot in receipt of an AGCS from Syerston Radio and the DA40 pilot in receipt of a Basic Service from East Midlands.

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

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the ATSU involved. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

Members first discussed the DA40 flight path and noted that the DA40 pilot had reported that he had routed to the east of Syerston to 'avoid the ATZ' but was, geographically at least, still overhead its boundary as displayed on the radar recording. Members felt that he would have been far better served by climbing to a more appropriate altitude rather than simply route away from the airfield. With regard to whether he was actually within the ATZ vertically, the East Midlands radar report and radar replay data indicated that it was most likely the DA40 was just above the vertical limit of the Syerston ATZ. It was acknowledged that transponder altitude tolerance could be significant but that 'on average' it was an accurate representation of true altitude. Members commented that, on the face of it, the estimated clearance of the DA40 above the ATZ was of the order of 70ft and that this was not a prudent course of action to take; with aircraft potentially joining overhead at the top of an ATZ, the DA40 pilot would have been better served by either contacting the aerodrome to communicate a course of action, or to remain a suitable height above the top of the ATZ (**CF1**). Members noted that there was nothing in regulation that required this action, but that it was entirely appropriate and in line with the requirements of consideration and communication inherent in good airmanship.

Neither pilot was in receipt of a surveillance based FIS; the glider pilot only having generic SA that other aircraft could be in the area and the DA40 pilot being aware that he was flying in proximity to the ATZ of an active airfield (**CF2**). Unfortunately the Viking FLARM was not compatible with the DA40 and the DA40 pilot did not report receiving a TAS alert (**CF3**) so the only barrier remaining to MAC was see-and-avoid. The DA40 pilot did not see the Viking (**CF4**) and the Viking pilot saw the DA40 at a late stage (**CF5**). Given the Viking reported altitude of about 1800ft and the DA40 transponder altitude of 2300ft, members thought that perhaps the Viking pilot had either been turning at the time (and therefore may have misperceived the geometry of the incident) or had been sufficiently startled by the late sighting that he had perceived a situation that carried a higher risk than in actuality (**CF6**). Whichever, the Board agreed that the pilot reports and factual information appeared to indicate that there was sufficient vertical separation that there had been no risk of collision even without the Viking pilot's manoeuvre, although it was apparent that safety had been degraded to some extent; consequently, the Board assessed the risk as Category C.

**PART C: ASSESSMENT OF CAUSE AND RISK****Contributory Factors:**

| 2019087 |   |  |   |
|---------|---|--|---|
| CF      | Factor  | Description                                | Amplification   |
|         | <b>Flight Elements</b>  |  |   |
|         | <b>• Tactical Planning and Execution</b>                              |  |   |
| 1       | Human Factors   | • Communications by Flight Crew with ANS   | Pilot did not communicate with appropriate airspace controlling authority |
|         | <b>• Situational Awareness of the Conflicting Aircraft and Action</b> |  |   |
| 2       | Contextual  | • Situational Awareness and Sensory Events | Pilot had no, only generic, or late Situational Awareness                 |
|         | <b>• Electronic Warning System Operation and Compliance</b>           |  |   |
| 3       | Technical   | • ACAS/TCAS System Failure                 | Incompatible CWS equipment  |
|         | <b>• See and Avoid</b>  |  |   |
| 4       | Human Factors   | • Monitoring of Other Aircraft             | Non-sighting or effectively a non-sighting by one or both pilots          |
| 5       | Human Factors   | • Monitoring of Other Aircraft             | Late-sighting by one or both pilots                                       |
| 6       | Human Factors   | • Perception of Visual Information         | Pilot was concerned by the proximity of the other aircraft                |

**Degree of Risk:** C.

**Recommendation:** Nil.

**Safety Barrier Assessment<sup>3</sup>**

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

**Ground Elements:**

**Situational Awareness of the Confliction and Action** were assessed as **not used** because the an AGCS does not provide deconfliction advice.

**Flight Elements:**

**Tactical Planning and Execution** was assessed as **partially effective** because the DA40 pilot routed close to the Syerston overhead when he could have afforded a wider berth either laterally or vertically.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because neither pilot was aware of the other as they flew into proximity.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the Viking TAS was incompatible with the DA40.

<sup>3</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

**See and Avoid** were assessed as **partially effective** because the Viking pilot saw the DA40 at a late stage and the DA40 pilot did not see the Viking.

