

AIRPROX REPORT No 2023032

Date: 15 Mar 2023 Time: 1137Z Position: 5204N 00108W Location: Turweston

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|-------------------|-----------------|----------------------------|
| Aircraft | Grob 109 | PA28 |
| Operator | Civ FW | Civ FW |
| Airspace | London FIR | London FIR |
| Class | G | G |
| Rules | VFR | VFR |
| Service | AGCS | AGCS |
| Provider | Turweston | Turweston |
| Altitude/FL | 1100ft | 1200ft |
| Transponder | A, C, S | A, C, S |
| Reported | | |
| Colours | White | White |
| Lighting | NR | Beacon, Strobes, Anti-cols |
| Conditions | VMC | VMC |
| Visibility | >10km | >10km |
| Altitude/FL | 1200ft | 1000ft |
| Altimeter | QNH (1015hPa) | QFE (1001hPa) |
| Heading | North | South |
| Speed | 70kt | NK |
| ACAS/TAS | Not fitted | SkyEcho |
| Alert | N/A | Information |
| Separation at CPA | | |
| Reported | 0ft V/50m H | Not Seen |
| Recorded | 100ft V/0.1NM H | |



THE GROB 109 PILOT reports that they held at the RW27 hold position to allow a solo circuit student to do a touch-and-go. They then lined-up and took-off behind. They followed the 20° noise abatement right-hand turn and then turned north to track the SkyDemon crosswind leg of the circuit, intending to climb to approximately 1500ft to fly to [destination]. They were monitoring the progress of the student to their left, looked ahead and found themselves on a direct head-on collision course with the other aircraft. It was in a left-hand turn, so they rolled hard left and the other aircraft, still in a left turn, passed underneath their starboard wing. They immediately advised the AGO of the Airprox and subsequently spoke to the AGO on the telephone. It appeared that the other pilot was inbound from [redacted] and decided to track the downwind leg in the opposite direction, supposedly 'outside the circuit' and then did a '180 left' at the crosswind end of the circuit to fly downwind. When asked if they had seen the motor glider, the other pilot apparently said that they had not. The incident left [the Grob pilot] severely shaken. They opined that the circuit flown by the other pilot was unorthodox and dangerous.

The pilot assessed the risk of collision as 'High'.

THE PA28 PILOT reports that they were flying solo to Turweston departing at 1104 from [departure airfield] with a PPR requested for 1145. At 1130 they were just west of Milton Keynes with about 14NM to run to Turweston. They changed frequency from Cranfield to Turweston to have some time to listen to the airfield traffic before contacting the Tower. As there was other traffic at Turweston, they decided to head north of Silverstone and join the circuit downwind, rather than request a straight in approach. When about 10NM out and over 2000ft altitude, they contacted the Tower to request airfield information. After passing north of Silverstone, they called the Tower to announce that their intention was to join the RW27RH circuit downwind from the north. They then began a gentle descending left turn towards the airfield, maintaining a constant lookout for any other traffic in the vicinity, particularly any aircraft in, or joining, the circuit. They heard no radio messages concerning other traffic that might affect but had

briefly noticed a CWS aircraft symbol to their starboard side on the SkyDemon. They looked at length in that direction, still habitually looking out of the aircraft for other traffic rather than down at the tablet. They saw no other aircraft. After completing the turn onto the downwind leg, and now at 1000ft aal, circuit height, they heard a radio call “that was a close one” immediately followed by another voice, “what, the joining aircraft?”. Neither message contained any identifying callsign, nor was there any follow-up to the question that had been posed by the second voice, which sounded like the Tower. They had no reason to suspect that they were the aircraft that was being referred to but, clearly, they were “a” joining aircraft and had seen a CWS symbol earlier, although were not able to verify it. They joined the downwind circuit at 1137. They then saw another aircraft some distance ahead in the circuit, though they did not recall anyone else saying that they were downwind. When seeing the aircraft on final, they began to turn base-leg. They heard a message that the aircraft on final was intending to touch-and-go, though they did not recall hearing its callsign, and they radioed that they were on final to land. They ensured that the other aircraft was established on the climb-out before fully committing to land. There were three other pilots in the tower paying landing fees when they arrived, any of whom may have been the subject of, or spoken, the mysterious radio messages. No-one raised any issue with them, so they were unaware that they were the pilot involved in an Airprox until alerted to it some days later.

THE TURWESTON AGO reports that at the time of the incident it had been a busy period with the run up to lunchtime, they had had a few aircraft joining the circuit and other aircraft departing. They recalled that, after initial contact, the PA28 pilot said that they would join downwind from the north. Because they were arriving from the east, they [the AGO] thought this a little odd, but were not too worried. The Grob took off to go to [destination], turned north crosswind and shortly after notified [the AGO] that they had taken avoiding action to avoid hitting another aircraft. At this point, they looked at the [FID] screen and could see that the PA28 had flown north of the circuit on a westerly track, with the Grob at the start of downwind, then the PA28 pilot had turned south to drop into the downwind position, this would have put [the PA28] in conflict with aircraft going crosswind, which was the position of the Grob at the time.

Factual Background

The weather at Cranfield was recorded as follows:

METAR EGTC 151120Z 20008KT 9999 FEW021 06/00 Q1016=

The Turweston airfield website gives joining procedures as follows:

8. Joining Procedures

Pilots should make themselves familiar with procedures operating at Turweston before departure or arrival. Details of these procedures including noise abatement routes are available in the Control Tower and on our website.

- a) Inbound aircraft should establish radio contact at 10nm or 5 minutes away.
- b) Circuit joining should be made at the circuit height of 1000 ft QFE.
- c) Pilots are responsible for their own separation in the circuit – orbits and extended circuits for spacing are permitted. Joining traffic must be aware of circuit traffic and plan their spacing accordingly.

Departures for RW27 are described as follows:

Runway 27:

Turn right 15 degrees at the end of the runway.

Maintain track 285 until passing the A43 and avoid the villages of Turweston (south) & Whitfield (north).

Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft could be seen and identified using Mode S information. At 1135:36 (Figure 1), the PA28 was to the northeast of Turweston, indicating 1500ft (radar QNH 1018hPa). The Grob 109 had climbed out and appeared to be turning crosswind, indicating 1100ft.

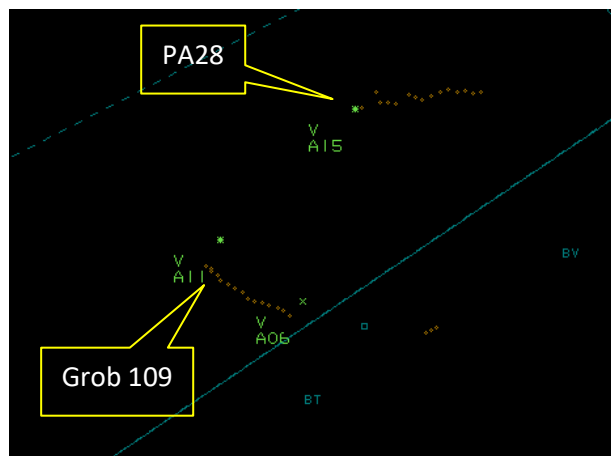


Figure 1 – 1135:38

The two aircraft continued to converge until CPA at 1136:51 when radar separation was 0.1NM horizontally and 100ft vertically (Figure 3).

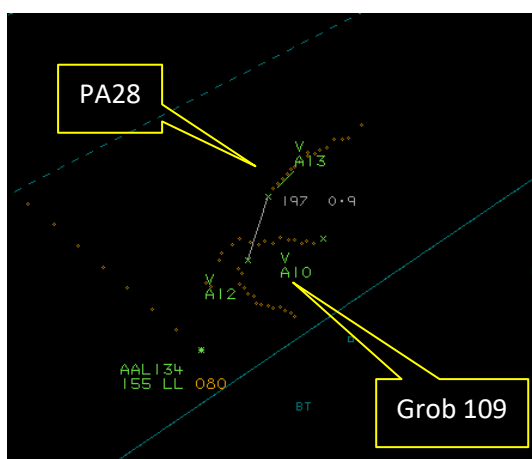


Figure 2 – 1136:31

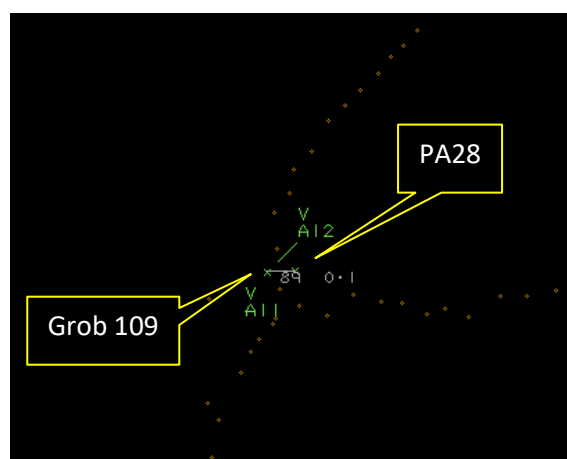


Figure 3 – 1136:51 – CPA

The Grob 109 and PA28 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.¹ An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.²

Summary

An Airprox was reported when a Grob 109 and a PA28 flew into proximity at Turweston at 1137Z on Wednesday 15th March 2023. Both pilots were operating under VFR in VMC, both were in receipt of an AGCS from Turweston.

¹ (UK) SERA.3205 Proximity.

² (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

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 AGO 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.

The Board first discussed the actions of the Grob 109 pilot. They had taken off from Turweston to depart to the north and reported suddenly having seen the PA28 in their 12 o'clock. Members noted that the PA28 pilot had made joining calls, which were heard by the AGO, detailing that they had been intending to join downwind, and so wondered why the Grob 109 pilot had not heard these calls (**CF4**). The Board noted that the Grob 109 had not been fitted with any form of CWS, which in this case may have alerted to the PA28 which had been fitted with both a transponder and ADS-B. Whilst it was for pilots to decide on their own requirements for additional equipment according to their needs, the Board wished to highlight to pilots that additional funding has been made available for electronic conspicuity devices through the CAA's Electronic Conspicuity Rebate Scheme, which has been extended until 31st March 2024.³ Once airborne, the Grob 109 pilot reported monitoring the student and so had seen the PA28 late (**CF6**) although, once seen, they had been able to take avoiding action.

The PA28 pilot had been joining Turweston from the northeast and had elected to conduct a downwind join. The pilot reported that they had not heard any other pilots on the RT, but the Grob 109 pilot and another pilot in the circuit had made calls which, the Board agreed, had not been assimilated by the PA28 pilot (**CF4**). Members thought that the positioning of the downwind join had been such that the likelihood of the aircraft conflicting with any departing traffic, or circuit traffic turning downwind, was increased, and they thought that the pilot should have foreseen this and positioned further north away from potential circuit traffic, or have joined via the overhead to allow time to assess the circuit traffic prior to joining (**CF2**). The Board considered that it was for the pilot of the joining aircraft to give way to circuit traffic and, in joining as they had, the PA28 pilot had not sufficiently integrated with the Grob 109 (**CF3**). Although the pilot reported having received a CWS alert (**CF5**), they reported that, despite looking, they could not see the other aircraft. Again, members thought that this should have acted as a warning to the pilot that there had been circuit traffic in the vicinity, even though they could not see it at the time. The Board was in agreement that, in the event, the PA28 pilot had not seen the Grob 109 at all (**CF7**).

The Board briefly discussed the role of the AGO, who had known that the PA28 had been joining for a downwind join and that the Grob 109 had been departing the circuit. Some members wondered whether the AGO could have provided Traffic Information to both pilots but, as the AGO had probably expected that both pilots had heard the other on the frequency, members agreed that because the AGO had not been required to sequence the aircraft, nor had they the authority to instruct the PA28 pilot to have joined differently, there had been little more they could have done in the circumstances. However, members went on to discuss the Turweston joining instructions as provided on their website and in the UK AIP. Members thought that the instructions could be interpreted in a number of ways (**CF1**), and noted that the CAA recommended that pilots join through the overhead, which was not mentioned at all in Turweston's joining instructions. It was acknowledged that there were a number of other airfields in the vicinity of Turweston that could have played a part in the original decision-making process when agreeing on airfield procedures, but that some of these airfields were no longer as busy as they had been in the past. Therefore the Board thought that it would be worth Turweston reviewing their joining instructions and resolved to make a recommendation for them to do so.

When assessing the risk of the Airprox, the Board considered both the pilots' and AGO's reports together with the radar data. They noted that, although the PA28 pilot had not seen the Grob 109 at all, the Grob 109 pilot had seen the PA28, albeit late, and had managed to take last-minute avoiding action. For this reason they agreed that safety had been much reduced and there had been a risk of collision (**CF8**); Risk Category B.

³ <https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/>

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

| 2023032 | | | | |
|---|----------------|---|---|--|
| CF | Factor | Description | ECCAIRS Amplification | UKAB Amplification |
| Ground Elements | | | | |
| • Regulations, Processes, Procedures and Compliance | | | | |
| 1 | Organisational | • Aeronautical Information Services | An event involving the provision of Aeronautical Information | The Ground entity's regulations or procedures were inadequate |
| Flight Elements | | | | |
| • Tactical Planning and Execution | | | | |
| 2 | Human Factors | • Action Performed Incorrectly | Events involving flight crew performing the selected action incorrectly | Incorrect or ineffective execution |
| 3 | Human Factors | • Monitoring of Environment | Events involving flight crew not to appropriately monitoring the environment | Did not avoid/conform with the pattern of traffic already formed |
| • Situational Awareness of the Conflicting Aircraft and Action | | | | |
| 4 | Human Factors | • Understanding/Comprehension | Events involving flight crew that did not understand or comprehend a situation or instruction | Pilot did not assimilate conflict information |
| • Electronic Warning System Operation and Compliance | | | | |
| 5 | Contextual | • Other warning system operation | An event involving a genuine warning from an airborne system other than TCAS. | |
| • See and Avoid | | | | |
| 6 | Human Factors | • Identification/Recognition | Events involving flight crew not fully identifying or recognising the reality of a situation | Late sighting by one or both pilots |
| 7 | Human Factors | • Monitoring of Other Aircraft | Events involving flight crew not fully monitoring another aircraft | Non-sighting or effectively a non-sighting by one or both pilots |
| • Outcome Events | | | | |
| 8 | Contextual | • Near Airborne Collision with Aircraft | An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles | |

Degree of Risk: B.

Recommendation: Turweston airfield reviews published airfield arrival and departure procedures.

Safety Barrier Assessment⁴

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

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the joining procedures at Turweston direct that pilots join the circuit at Turweston at circuit height, thus introducing the potential for confliction with traffic established in or departing the circuit.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the PA28 pilot had not conformed with, or avoided, the pattern of traffic formed by the Grob 109.

⁴ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had assimilated the RT calls that could have alerted them to the presence of the other aircraft.

Electronic Warning System Operation and Compliance were assessed as **partially effective** because the PA28 pilot had received a CWS warning, but it had not helped them to visually identify the Grob 109.

See and Avoid were assessed as **partially effective** because it had been a late sighting by both pilots.

| Airprox Barrier Assessment: 2023032 | | Outside Controlled Airspace | | Effectiveness | | | | |
|-------------------------------------|--|-----------------------------|-------------|---------------------|----------------------------|----------|-----|-----|
| Barrier | | Provision | Application | Barrier Weighting | | | | |
| | | | | 0% | 5% | 10% | 15% | 20% |
| Ground Element | Regulations, Processes, Procedures and Compliance | ⚠️ | ✅ | [Yellow bar to 5%] | | | | |
| | Manning & Equipment | ✅ | ✅ | [Green bar to 5%] | | | | |
| | Situational Awareness of the Conflicting Aircraft & Action | ⚠️ | ⊖ | [Red bar to 15%] | | | | |
| | Electronic Warning System Operation and Compliance | ⊖ | ⊖ | [Grey bar to 5%] | | | | |
| Flight Element | Regulations, Processes, Procedures and Compliance | ✅ | ✅ | [Green bar to 10%] | | | | |
| | Tactical Planning and Execution | ✅ | ⚠️ | [Yellow bar to 10%] | | | | |
| | Situational Awareness of the Conflicting Aircraft & Action | ⚠️ | ⊖ | [Red bar to 20%] | | | | |
| | Electronic Warning System Operation and Compliance | ⚠️ | ⚠️ | [Yellow bar to 15%] | | | | |
| | See & Avoid | ⚠️ | ⚠️ | [Yellow bar to 20%] | | | | |
| Key: | | Full | Partial | None | Not Present/Not Assessable | Not Used | | |
| Provision | ✅ | ⚠️ | ⊖ | ⊖ | | | | |
| Application | ✅ | ⚠️ | ⊖ | ⊖ | ⊖ | | | |
| Effectiveness | Green | Yellow | Red | Grey | White | | | |