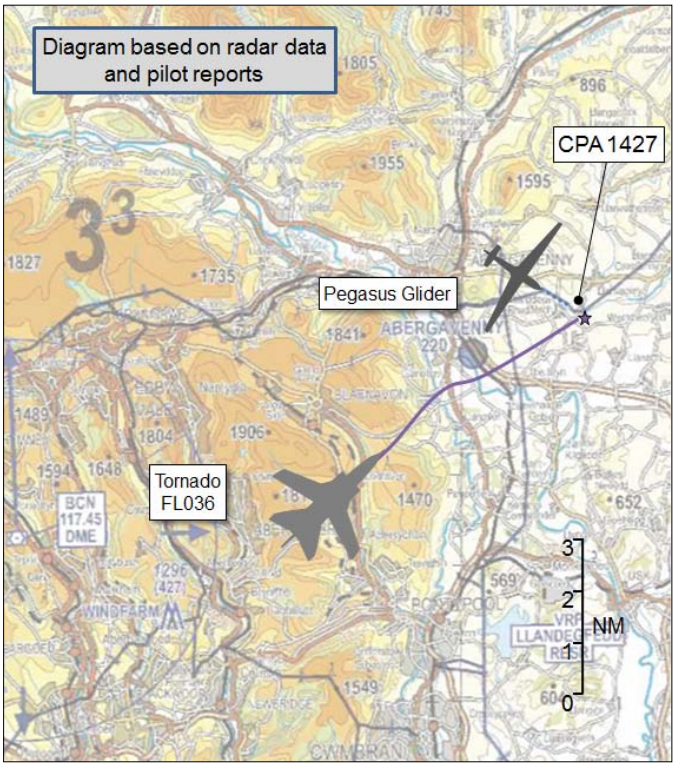
AIRPROX REPORT No 2016132

Date: 05 Jul 2016 Time: 1427Z Position: 5148N 00255W Location: IVO Abergavenny

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Pegasus 101A	Tornado
Operator	Civ Club	HQ Air (Ops)
Airspace	Lon FIR	Lon FIR
Class	G	G
Rules	VFR	VFR
Service	None	None
Altitude/FL	NK	FL036
Transponder	Not Fitted	A, C, S
Reported		
Colours	White, Red wing-tips	Grey
Lighting	Nil	NR
Conditions	VMC	VMC
Visibility	30km	
Altitude/FL	3924ft	3500ft
Altimeter	QNH	NK
Heading	130°	NE
Speed	50kt	350kt
ACAS/TAS	FLARM	TCAS II
Alert	N/A	None
Separation		
Reported	30ft V/500ft H	1000ft V/1nm H
Recorded	NK	



THE PEGASUS PILOT reports that he was climbing in a weak, broken thermal and had straightened for a moment before continuing in a low-banked right-hand turn. Without hearing it first, a fighter jet suddenly approached from his starboard side and flew directly across the front of the glider at very high speed.

He assessed the risk of collision as 'High'.

THE TORNADO PILOT reports that he had completed a practice diversion at Cardiff and was receiving a Traffic Service from Cardiff at 5000ft AMSL, above a 500ft cloud layer. At 1426 ATC advised of pop-up traffic left of the nose at 8nm possibly a glider or a microlight. He requested a right turn of 20° for separation, which was approved. At 1426:30 ATC advised that the previous traffic was no longer a threat and, because he was approaching his low-level entry point, the Traffic Service was terminated and he descended to 3500ft. At 1427:30 the pilot saw a glider left of the nose with approximately 1000ft vertical separation and about 1nm horizontal separation. He commented 'no threat and not on TCAS'. By 1427:48 both crew members were visual, and with no confliction perceived, he continued the descent into low-level.

He perceived the severity of the incident as 'Low'.

Factual Background

The weather at Cardiff was recorded as follows:

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METAR EGFF 051420Z 27013KT 9999 FEW022 SCT038 17/12 Q1021=
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Analysis and Investigation

UKAB Secretariat

The Pegasus and Tornado 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]. If the incident geometry is considered as converging then the Tornado pilot was required to give way to the glider[2].

Comments

HQ Air Command

This Airprox demonstrates that lookout continues to be a prime defence to MAC. Both aircraft were fitted with a form of electronic conspicuity (FLARM and TCAS II respectively) but they were unfortunately incompatible. Since FLARM does not appear on ATC displays, that barrier was also unavailable (acknowledging that, at the time of the Airprox, neither aircraft was in receipt of an Air Traffic Service). It seems that this is a case of individual perspective on the miss distance; military crews are all acutely aware of the possibility of encountering gliders in Class G airspace, particularly in the vicinity of ridgelines, and manage their cockpit workload to ensure that lookout is not compromised in areas where they are most likely to encounter other traffic.

BGA

On a soar-able day, gliders will often concentrate in an area that provides good prospects for rising air. On that basis, if you see a glider circling, there may be others in the vicinity.

Summary

An Airprox was reported when a Pegasus glider and a Tornado flew into proximity at 1427 on Tuesday 5th July 2016. Both pilots were operating under VFR in VMC, neither pilot was in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft and radar photographs/video recordings.

The Board first looked at the actions of the glider pilot and noted that he was in Class G airspace where see-and-avoid was the main mitigation against mid-air collision. Although his aircraft was fitted with FLARM, this was not compatible with the TCAS system on the Tornado and so he had no prior warning of the approach of the Tornado. In the end, it had been his look-out (and hearing) that had enabled him to see the Tornado, albeit too late for him to take any avoiding action.

Turning to the Tornado pilot, members noted that he had reported seeing a glider 1nm and 1000ft away, which the Board were unable to reconcile with the glider pilot's report of about 500ft separation. Fortunately, the glider pilot had a Go-Pro type camera running at the time which

[1] SERA.3205 Proximity.
[2] SERA.3210 Right-of-way (c)(2) Converging.

recorded the incident and the Board were able to watch the video of the moment that the Tornado passed in front of it (see the still-frame image taken just before CPA). Although the Board recognised that camera focal length can sometimes be misleading in perception of separation, the Board agreed that as they crossed, the two aircraft appeared to be much closer than the Tornado pilot had reported and this led them to believe that he may in fact have seen another glider, not the Airprox glider.

In looking at the barriers that were relevant to this Airprox, the Board agreed that ATS barriers were all not available because neither pilot was receiving a service at the time (although the Tornado had been given generic Traffic Information on possible gliders that were no longer deemed to be a threat prior to the Airprox). Members noted that the two aircraft were operating with different CWS that were not compatible with each other (FLARM and TCAS), and the Board were disappointed that this should be the case because this rendered each CWS ineffective – installation of cooperative systems was vital in this regard: either SSR or an SSR-compatible CWS in the glider (such as PilotAware[3] for example); or a FLARM-compatible CWS in the Tornado (such as PilotAware[3] for example). Finally the Board thought that see-and-avoid had also been ineffective because the Tornado pilot probably didn't see this glider, or at least perceived it to be further away than it was, and the glider pilot saw the Tornado too late to take any action.

This led the Board on to determining the cause of the Airprox, which was quickly agreed to have been a possible non-sighting by the Tornado pilot and a late sighting by the glider pilot. However, the Board debated the risk for some time as they repeatedly ran through the glider pilot's video recording. Some members maintained that this incident was a Category C (no risk of collision) because of the distance that the Tornado had passed ahead of the glider. Others were concerned that, even for a fast-jet at 350kts, the crossing rate of the Tornado across the nose of the glider indicated that it was much closer than a 'no risk of collision' situation. In the end, after much discussion, the Board agreed on risk Category B, safety had been much reduced below the norm.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A possible non-sighting by the Tornado pilot and a late sighting by the glider pilot.

Degree of Risk: B.

Barrier Assessment:

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).[4] 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, Not Available, or Not Assessable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.

[3] See www.pilotaware.com and www.pilotaware.com/pilotawareintroduction/ - other systems are available.
[4] 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.

Airprox Barrier Assessment: Airspace Classification F-G

Barrier	Weighting
ATS: Airspace Design & Procedures	10%
ATS: Operational Management & Planning	0%
ATS: Operational Threat Awareness & Management	15%
ATS: Electronic Warning System & Resolution Action	0%
Flt Crew: Pre Flight Management & Planning	10%
Flt Crew: Acting on Information	10%
Flt Crew: Operational Threat Awareness & Management	20%
Flt Crew: Electronic Warning System & Resolution Action	15%
Flt Crew: See & Avoid	20%