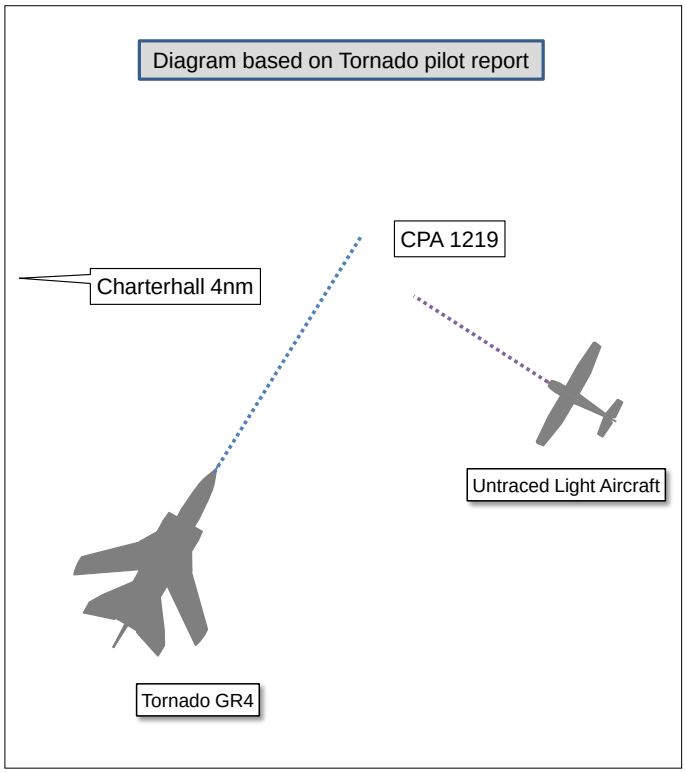
AIRPROX REPORT No 2013167

Date/Time: 22 Nov 2013 1219Z

Position: 5543N 00215W (4nm E Charterhall)

Airspace: Scot FIR (*Class*: G)

	Aircraft 1	*Aircraft 2*
Type:	Tornado GR4	Light Aircraft
Operator:	HQ Air (Ops)	Unknown
Alt/FL:	3500ft RPS (1017hPa)	NK
Conditions:	VMC	NK
Visibility:	10km	NK
Reported Separation:	6-900ft H	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO PILOT reports conducting a low-level training sortie. The grey camouflaged aircraft had navigation lights and HISLs selected on, as was the SSR transponder with Modes A, C and S. The pilot was operating under VFR in VMC, not in receipt of an ATS but listening out on the Low-Level Common Frequency, 278.0MHz, and on an intra-formation frequency. On rolling out of a full loft recovery[1] and commencing a descent to low-level, heading 030° at 430kt, the WSO[2] called a confliction off the right wing, slightly high and about 6-900ft away. The pilot immediately saw the aircraft, a 'civilian light aircraft' with a high wing and visible supporting struts, similar to a Cessna 152/172, which appeared to be straight and level, possibly pitching up as it's pilot saw the Tornado. The light aircraft was first seen at CPA and the 2 aircraft had diverging vectors so the Tornado pilot did not take any avoiding action but continued the descent to low-level. The pilot commented that the crew had just completed a full loft recovery after simulated weapons release, which was flown 'heads-in' [on instruments], in accordance with the loft recovery procedure.

He assessed the risk of collision as 'Low'.

THE LIGHT AIRCRAFT: The Airprox was not observed on area radar and, although a number of primary and secondary tracks in the immediate area were traced back to airfields of departure, none of the pilots concerned recalled flying in proximity to a Tornado. Regrettably, the light aircraft pilot could not be traced.

Factual Background

The weather at Edinburgh and Newcastle was recorded as follows:

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METAR EGPH 221220Z 24007KT CAVOK 03/M01 Q1023
METAR EGNT 221220Z 33006KT 9999 FEW035 06/03 Q1022
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[1] Loft attack: the aircraft is pitched up short of the target and the weapons are released at a pitch angle where their forward throw is sufficient to enable them to reach the target. The aircraft is at a high nose-up attitude at weapon release and is recovered to low-level by flying a procedure consisting of a number of pitch, bank and altitude 'gates', by reference to the aircraft instruments. The resulting manoeuvre resembles a high energy wing-over through about 150°-180°.
[2] Weapon Systems Officer. The Tornado rear-seat crew member.

Analysis and Investigation

UKAB Secretariat

The Tornado pilot's recollection is of the light aircraft being on a right to left crossing track, passing down his right hand side. It was therefore his responsibility under the Rules of the Air (as reflected in Military Flying Regulations) to give way to the light aircraft[3]. Both pilots shared an equal responsibility for collision avoidance[4].

Occurrence Investigation

After consideration of the circumstances of this incident and Tornado force training requirements, RAF Marham has revised the instructions for loft attack procedures. The full loft procedure can now only be conducted in the simulator, in an Air Weapons Range or in the Night Low Flying System when airspace is known to be sanitised.

Comments

HQ Air Command

The recovery from a full loft delivery is flown by the pilot as a head-down instrument procedure, whilst the WSO monitors the pilot's actions and, where able, continues the lookout scan. This ensures that the ac remains safely clear of terrain whilst also providing a level of protection against MAC[5]; CFIT[6] is deemed the primary risk during the manoeuvre. By the time the Airprox occurred, the loft recovery had just been completed and the pilot had resumed normal head-up flying and was contributing to the crew's lookout responsibility. Since this incident, the RAF Marham Tornado SOPs have been amended to ensure that lookout is given greater priority, with the full loft recovery only being practiced in specific circumstances.

Summary

An Airprox was reported when a light aircraft and a Tornado flew into proximity at 1219 on 22nd November 2013, in the vicinity of Charterhall. The Tornado pilot was operating in VMC under VFR without an ATS; the light-aircraft pilot could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

The only information available to the Board was a report from the Tornado pilot.

The Board initially considered the actions of the Tornado pilot. He had carried out a correctly planned, briefed and authorised full loft manoeuvre, from which he had just completed flying the recovery, iaw SOPs. The WSO was the first to see the light aircraft, albeit at CPA, and the Tornado pilot quickly achieved visual contact also. The Board was unable to ascertain whether the light aircraft pilot saw the Tornado but from the geometry of confliction, with the Tornado approaching from up-sun in a descent in the high-wing light aircraft pilot's left 9.30 position, the Board felt that the pilot had probably either not seen the Tornado before CPA, or had, at best, seen it too late to take any effective avoiding action.

Notwithstanding the dearth of information as to the light aircraft pilot's actions prior to CPA, the Board agreed that the separation between the Tornado and light aircraft appeared to have been purely providential. Some members opined that this meant that the Board should classify the outcome as a Category A event given that the reported 6-900ft separation was precious little in such a highly-dynamic scenario where the slightest easing of backpressure or bank by the Tornado pilot might

[3] Rules of the Air 2007 (as amended), Rule 9 (Converging)
[4] ibid., Rule 8 (Avoiding aerial collisions)
[5] Mid-air collision
[6] Controlled flight into terrain

easily have resulted in a very different outcome. However, equally, the assessment of 6-900ft could have been conservative under the circumstances and 'startle factor' might easily have led the Tornado crew to underestimate the actual separation. All that could be said was that a degree of separation had existed but, lacking any radar replays, no proper analysis could be done on such scant information.

It was noted that as a result of the Occurrence Investigation and analysis of the incident the RAF Marham loft SOPs had been amended. The Board were heartened by this proactive approach although, without wishing to diminish its importance, they cautioned against any assumption that the Night Low Flying System might be considered as a 'sanitised' environment – plenty of civilian aircraft operated at night also, albeit normally remaining 1000ft above the highest obstacle within 5nm of their track. Acknowledging the need for the WSO to maintain a good lookout whilst the pilot was engaged 'head-in', military and ex-military members commented that, provided good clearing lookout scans into the recovery area were conducted prior, loft manoeuvres might still be appropriately conducted: otherwise, taken to the extreme, there was a danger that any high-energy military manoeuvre might be considered too risky.

The discussion turned to finding the cause and the determination of the degree of risk. After much debate, the Board finally agreed that although the cause might be seen as a non-sighting by the Tornado crew, there was simply too little information on which to make any meaningful finding of the actual risk, or what the light aircraft pilot may, or may not, have seen or done.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Insufficient information.

Degree of Risk: D.

ERC Score[7]: N/S.

[7] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.