

AIRPROX REPORT No 2013081

Date/Time: 19 Jul 2013 1524Z

Position: 5710N 00341W
(6nm E Aviemore)

Airspace: LFA 14 (Class: G)

Reporting Ac Reported Ac

Type: Sea King Tornado GR4

Operator: HQ Air (Ops) HQ Air (Ops)

Alt/FL: 150ft 300ft
agl agl

Weather: VMC VMC CLBC

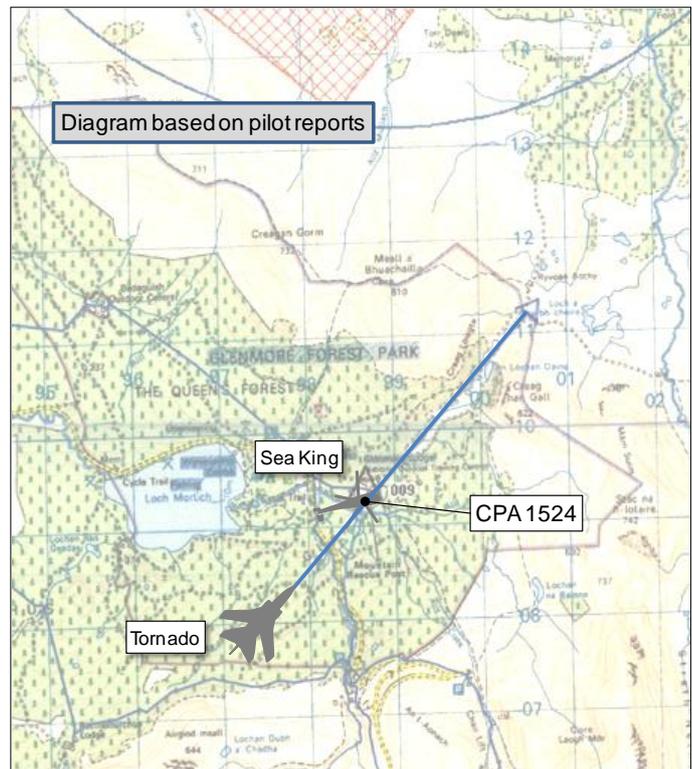
Visibility: 20km 50km

Reported Separation:

100ft V/0m H Not Seen

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SEA KING PILOT reports undertaking mountain flying training in the Cairngorms. The yellow helicopter had the upper strobe light selected on and to red, the lower strobe off, pilot's landing lamp on, rear spot light on and pointing backwards, and navigation lights on. The SSR transponder was selected on with Modes A and C. The aircraft was not fitted with an ACAS. The Sea King pilot was operating under VFR in VMC without an ATS. It was noted prior to flight that there was an increased risk from extensive fast-jet traffic associated with a NOTAM'd local military exercise but when their low-level booking was made the route showed no conflicts in CADS¹. After approximately 1hr of mountain flying training, the Sea King pilot elected to land at Glenmore Lodge² to pick up some role equipment which had been left on a previous operation. The recovery and pre-landing checks (including strobes to red, although both rear and forward spot lights were on) were completed and the base was contacted by FM radio to establish whether the landing site was available. Low-level common frequency was being monitored but no calls were made. The pilot was in a descending right hand turn, passing through a heading of 070° at 60kt and approaching a position of long finals about ¼nm from the site, when the crew noticed both the jet noise and the shadow of an aircraft as it flew directly overhead, about 100ft above. The other aircraft was identified as a Tornado but it had not been seen prior to CPA. Expecting the possibility of a second aircraft, the strobes were selected back to white and a call was made on the low-level common RTF to which the Tornado pilot replied confirming that he had indeed just passed Glenmore and that he had not seen the Sea King.

He assessed the risk of collision as 'Low'.

THE TORNADO PILOT reports conducting a passenger flight, operating on detachment from home base. The grey camouflaged aircraft had navigation, obstruction and strobe lights selected on, as was the SSR transponder with Modes A and C. The aircraft was not fitted with an ACAS. The pilot was operating under VFR in VMC without an ATS and was listening out on the low-level common frequency. After 15min of general handling, the pilot entered low-level 10nm South of Inverness airport and flew a pre-planned low level route in an anti-clockwise direction down Loch Ness to Fort

¹ Centralised Aviation Data Service (CADS) is a secure, and collaborative, advisory web based flight planning service that reduces the risk of collision with other aircraft and physical hazards such as overhead wires in uncontrolled airspace.

² Glenmore Lodge is the Scottish National Outdoor Training Centre, located 6nm East of Aviemore, in the Cairngorms National Park.

William and then East towards the Cairngorms. As he entered low-level, he made a radio call on the low-level common frequency detailing this route but heard no reply. Shortly after flying past Glenmore Lodge, heading 090° at 400kt, he climbed for a medium-level transit back to base. On passing 4000ft the pilot heard a transmission on the low-level common RTF from a Sea King pilot, calling to a Tornado aircraft in the vicinity of the Cairngorms. The Tornado pilot replied and ascertained that he had just over-flown the helicopter in the vicinity of Glenmore Lodge. Neither the pilot nor the passenger saw the helicopter at any stage and thus were unable to assess the probability of collision. He noted that the weather was excellent, with no cloud and 30nm visibility.

Factual Background

The Inverness weather was recorded as follows:

METAR EGPE 191520Z 03010KT 9999 FEW040 22/14 Q1028

Analysis and Investigation

UKAB Secretariat

Both pilots were entitled airspace users in the military low-flying system, correctly booked in and authorised to perform their tasks. They were equally responsible for collision avoidance³ and the Sea King pilot had right of way⁴. Glenmore Lodge is positioned at the Eastern end of a West-East orientated geological basin and, from the Tornado pilot's approach path, the Sea King would have been manoeuvring against a background of trees, fields and terrain. The Sea King pilot was in a descending right hand turn, away from the approaching Tornado, and his attention was focused on the landing area.

Occurrence Investigation

The Sea King crew attended a SAR shift hand over brief, which included MET brief, NOTAMs, aircraft serviceability and any other issues. All crew were sufficiently rested and within crew rest time for the duration of the shift. Following the brief the crew decided to carry out a routine training flight to include a test of a recently repaired Rad Alt, mountain flight training and pick up of First Aid equipment from Glenmore Lodge in the Cairngorms. The planned take off time was 1400L. This time was selected to take advantage of reduced low flying activity from RAF Lossiemouth in the local airspace.

Approx 45min prior to take off, the crew planned the sortie including an update of the MET and NOTAMs. As part of this planning process, the Ops Assistant input the sortie details into the CADS. As part of the out brief a check of CADS was carried out indicating there was no other planned military air traffic in the operating area. The actual departure time was 1500L. This was due to a visit from other personnel. The Ops Assistant adjusted CADS to reflect this timing change.

After successfully testing the Rad Alt over the sea, the Sea King pilot proceeded to the Cairngorm mountain range to conduct mountain flying. On route to the Cairngorm range, he tuned the radio to the Low Level Common (LLC) frequency. They monitored the frequency throughout their time at low level over land, no broadcast was made to announce their position or intentions. On completion of the mountain flying, the Sea King pilot manoeuvred from a highpoint near Cairngorm mountain towards the Glenmore Lodge in the base of the valley. During this manoeuvre, the aircraft was flown at approx 100-150ft agl, as the crew were aware of the fast jet low flying limit of not below 250ft. This is a standard practice for rotary assets to give some separation from fast jet traffic.

³ Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions)

⁴ *ibid.*, Rule 11 (Overtaking)

After confirming by FM radio with Glenmore Lodge that the landing site was available, the Sea King pilot began an approach to land. Recovery and pre-landing checks were carried out. He was in a descending right hand turn, about ¼nm south of the lodge when the crew became aware of a fast jet passing overhead. The first indication was jet noise followed by a shadow passing over the aircraft. Only one of the rear-crew recalled seeing the other aircraft directly overhead and estimated it passed overhead at a distance of 100ft, but he did not have sufficient time to warn the other crew. The Sea King pilot made a transmission on LLC with his current position, mentioning that a fast jet had just passed overhead. The Tornado pilot replied, confirming that he had just passed Glenmore Lodge.

The Tornado squadron was deployed to RAF Lossiemouth to take part in a large exercise, where the Squadron were operating from the 'Northern HAS site'. The Tornado pilot planned 2 singleton passenger sorties on Thursday 18 July to be flown on the morning of Friday 19 July. The original plan was to carry out 2 consecutive sorties with an engine running change⁵, with both sorties using the same plan. The standard passenger flight paperwork was completed with correct authorisation for the flights. This included authorisation to carry out up to 15min of low-level flying.

The Tornado pilot reported for duty on 19 July, being well rested and within crew rest hours, where he met and briefed both passengers. The pilot received a standard pre-flight brief, including MET conditions, airfield and aircraft serviceability. The final planning aspects of the sortie were completed, including low-level booking, warn-out and a check of warnings/NOTAMs for the period of each sortie. Both routes were input to CADS as separate sorties by the Ops staff. On this detachment the Squadron Ops staff travelled from the Pilot briefing facility on the Northern HAS site to a permanently based Squadron Ops to utilise a computer dedicated for CADS use; approximately 5 minutes walk. The Tornado pilot received an out-brief prior to flight and carried out the first sortie as planned, landing with sufficient fuel to carry out the second sortie without refuelling.

On seeing-in the ac, the line crew noticed a minor unserviceability, resulting in a delay to the second sortie. The Tornado pilot crewed out of the aircraft and completed the sortie with an in-brief and post sortie paperwork. He decided to fly the second sortie at 1530L after the exercise traffic had landed. The original plan was used and the Tornado pilot rechecked MET, NOTAMs and warnings. The warn-out/low level bookings were amended to reflect the new takeoff time. The timings on CADS were not amended. The pilot received a standard out-brief prior to crewing in. This did not include a fly through on CADS to check for any deconfliction issues.

The Tornado pilot took off at 1530L from RAF Lossiemouth and routed towards Tain range, to identify the various targets. On completion of the range reconnaissance, they proceeded south towards the Nairn gap. The pilot contacted Inverness RAD to pass his intentions and agreed a Traffic Service as he passed the airfield. Once south of Inverness airfield, he changed from Inverness RAD to the LLC frequency and immediately made a transmission to broadcast his position and intentions. He heard no response and flew the route as planned. Whilst flying, the Tornado pilot selected thermal heat cues to be displayed in the HUD. As only 15min low-level flying was planned, no further calls on LLC were made. The Tornado pilot entered the Cairngorm area and transited from south to north. The route took the aircraft over the top of the Cairngorm Mountains and into the valley to the south of Glenmore Lodge. Whilst entering the valley, the pilot manoeuvred the aircraft into a right hand turn with the right wing down, enabling him to look into the valley ahead. He flew past Glenmore Lodge, lining the aircraft up to pass through the valley 1nm to the north-east (see Airprox diagram). Shortly after passing Glenmore Lodge, the Tornado pilot heard the transmission from the Sea King pilot on LLC. The Tornado pilot assessed that he had been in proximity to the Sea King and replied on LLC, confirming he had just passed Glenmore Lodge. He confirmed that he had not seen the Sea King and completed the sortie with no further issues. The Tornado aircraft video tape did not record any flight data.

⁵ One engine is kept running after landing, maintaining power to the aircraft systems, whilst the returning passenger gets out and the next passenger is strapped in.

CADS was not updated to reflect the new timings of the second Tornado sortie, therefore any other CADS user would not have been made aware of deconfliction issues. At home base, the Squadron used stand alone computers in preference to DII terminals as DII terminals were deemed too slow and unreliable. Whilst on detachment at RAF Lossiemouth, no stand alone computer was available. The Squadron Ops procedure for CADS input whilst on this detachment was to walk across to an adjacent RAF Lossiemouth based Squadron and input the data on their dedicated CADS computer. The time to travel to the RAF Lossiemouth based Squadron from the detached Squadron location was approximately 5min walk. This also meant that no CADS flythrough was carried out at the out-brief as the designated CADS computer was not co-located at the out-brief desk.

The out-brief did not specifically mention a check of CADS. The only mention was a generic 'deconfliction' in the out-brief check list. A check of CADS was not a mandated requirement at the time.

No transmission was made on the LLC frequency by the Sea King pilot to broadcast their position and intentions. This was not a mandated requirement for the Sea King pilot.

Comments

HQ Air Command

Whilst this incident could perhaps be viewed as a normal operating hazard, the lack of an accurate take-off time on CADS resulted in the sortie being flown without the best available situational awareness. This event occurred immediately prior to specific Defence-wide guidance on the use of CADS, so its use was not mandated at the time. It is nevertheless worthy of note that CADS was available, in-use and would have identified the conflict to the Tornado captain and authorizer, had it been updated with the delayed take-off time.

Since this event, CADS has become a mandatory element of sortie planning and authorization and depicts the planned tracks of approximately 120 sorties per day. The use of CADS has not reduced the requirement for solid sensor-management and thorough look-out during the sortie but has created the facility for awareness of potential military conflicts and subsequent mitigation. CADS continues to be rolled-out and will include other organisations, including air assets of HM Coastguard and the Police Force.

RAF Flight Safety has provided LF Ops with a form of words to go into the LF Handbook, suggesting when calls on the LF Common frequency might be appropriate.

Summary

A Tornado GR4 and a Sea King helicopter flew into conflict near Glenmore Lodge at 1524 on 19th July 2013. Both pilots were operating under VFR in the military low-flying system and were at low level. The Tornado pilot did not see the other aircraft.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and reports from the appropriate operating authorities.

Board members first considered the pilots' actions during the flights. The Sea King crew were conducting a routine sortie for which the pilot had taken mitigating action against low-level fast-jet traffic by listening out on LLC (in the hope of gaining extra SA), and by consciously planning to remain not above 150ft agl (thereby generating a degree of height deconfliction from fast-jet traffic which was required to remain not below 250ft agl). The Board commented that, given he was about to conduct the focused task of landing at Glenmore Lodge where his attention would undoubtedly be on positioning and carrying out the landing manoeuvre rather than wider look-out, the Sea King pilot

might usefully have made a radio call to that effect in order to warn other low-level users. For his part, the Tornado pilot had used LLC on entering low-level, iaw SOP, but was geographically separated from the Sea King at the time and his transmission was therefore not heard by the Sea King pilot probably because of terrain masking.

The Board felt that the key to this incident lay in the planning phase of the sortie and, in particular, the use of CADS. The delayed Tornado take-off time for the second passenger sortie had not been entered into the CADS system, and the Tornado pilot had not checked CADS for potential conflicts during his out-brief, which, at the time, was not a mandated action. The Military Pilot member informed the Board that CADS operation had been in its infancy at the time, and that subsequent development had resulted in SOPs for its use that could have prevented this occurrence. Notwithstanding, it was noted that CADS could only provide deconfliction between planned routes, and that military aircraft very frequently flew off-route for operational training reasons, thereby reducing the effectiveness of CADS deconfliction advice. The Board were informed that the tool was therefore used purely for conflict awareness, highlighting areas and times where there was potential for conflict to occur, and that 'see and avoid' remained the primary means of deconfliction at low-level. The Board were also informed that deconfliction would be further enhanced with the planned introduction of an ACAS to the Tornado fleet, which would have assisted in this occurrence by providing an electronic warning to the Tornado pilot of the Sea King's presence.

Given that the Tornado pilot did not see the Sea King during what was effectively an overtaking manoeuvre, the Board were unanimous in their assessment of the cause. However, members were divided over the degree of risk. All agreed that the incident was risk bearing, but some were of the opinion that chance had played a major part in events and that nothing more could have been done to improve matters (Category A). After considerable discussion there was a majority opinion that the height deconfliction achieved due to the pilots remaining respectively below 150ft agl (Sea King) and above 250ft agl (Tornado) had provided an element of separation, and effectively avoiding action, of its own even though the pilots had not been aware of the other's aircraft. Nevertheless, it was decided, by a majority, that safety margins had been reduced much below the normal (Category B).

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	A non-sighting by the GR4 pilot.
<u>Degree of Risk:</u>	B.
<u>ERC Score</u> ⁶ :	101

⁶ 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.