

## AIRPROX REPORT No 2010166

Date/Time: 1 Nov 2010 1955Z NIGHT

Position: 5741N 00357W (8nm  
NNE of Inverness - elev  
31ft)

Airspace: Scottish FIR (Class: G)

Reporting Ac Reporting Ac

Type: SAAB SF34 Tornado GR4

Operator: CAT HQ Air (Ops)

Alt/FL: 3000ft 2600ft  
QNH (992mb) (1002mb)

Weather: IMC IICL VMC

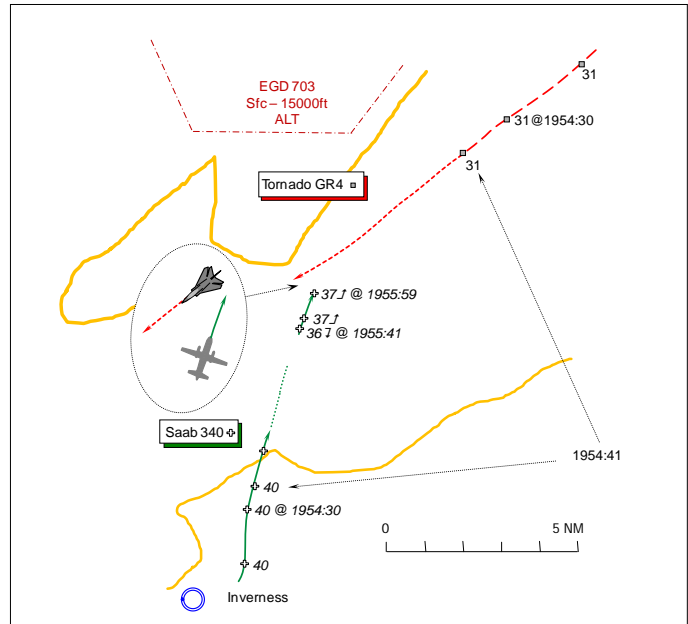
Visibility: NR 30km

Reported Separation:

400ft V/1nm H 100ft V/0.7nm H

Recorded Separation:

Not recorded



## BOTH PILOTS FILED

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

**THE SAAB SF340 (SF34) PILOT** reports that he was inbound to Inverness from Stornoway under IFR. He was in receipt of a Procedural Service (PS) from Inverness APPROACH (APP) on 122.6MHz and a squawk of A6177 was selected with Mode C; enhanced Mode S and TCAS are fitted.

From overhead the INS VOR/DME, steady heading 025° at 210kt, established outbound for an ILS procedure for RW23 descending through 3000ft Inverness QNH (992mb), a contact first appeared on the TCAS display about 12nm away in the direction of the flightpath for the approach procedure. APP advised of a Tornado GR4 that had been in contact earlier and reported it was operating on a night flying exercise in Tain Air Weapons Range (AWR) – EGD703. Inverness ATC only provides a PS at this time of the day, but they helpfully informed them that the other ac now seemed to be only 10nm away at an altitude of 2600ft Mode C unverified. The GR4 was not working Inverness ATC. The approach procedure calls for a decent to 2000ft flying outbound to 9.5nm so he kept the RoD low as he was not sure of the GR4 crew's intentions and tried to gain visual contact with the other ac. Flying in IMC, in and out of a thin layer of clouds, at about 7nm outbound on the procedure (INS R029 D7) he initiated a slight climb away from the GR4's indicated level to avoid it. Shortly thereafter, TCAS enunciated a TA on the traffic. According to the TCAS display the GR4 passed about 1nm away in their 10 o'clock and 400ft beneath his SF34 at the closest point, after it had crossed obliquely from R – L ahead. The GR4 was not seen visually; no RAs were triggered. The approach was then continued to an uneventful landing. He assessed the Risk as 'medium'.

The HISLs, anti-collision beacons, navigation lights, logo lights and landing lights were all on.

**THE TORNADO GR4 PILOT** reports that he was operating as a singleton carrying out a practice night bombing sortie in Tain AWR with NVDs. When the Airprox occurred they were in contact with the AWR on Tain Range Primary UHF; a squawk of A7002 [Danger Areas General] was selected with Mode C on; neither Mode S nor TCAS is fitted. All the ac's lights were serviceable and switched on; the 'strobes' were set to red.

On arrival in the area, they had descended to 3000ft amsl with Lossiemouth APP to gain VMC before switching to Inverness ATC for further deconfliction inbound to Tain AWR. Inverness ATC confirmed that they had no traffic to affect and so they switched back to their tactical operating frequency and checked in with Tain AWR about 10min before the reported Airprox timings. Having completed 2 bombing runs at 2500ft amsl in Tain AWR, they then repositioned to conduct a further bombing run against another Target. Positioning for this attack necessitated a leg heading of 235° (T) from Tain AWR, down the Moray Firth towards Cromarty Head at 2,600ft in order to avoid the Lossiemouth SAR HNTA which was active to 2500ft amsl. Whilst on this leg the pilot and navigator both saw on NVGs the strobe lights of another ac operating at a similar height, near the base of cloud cover, about 2nm away. The SF34 passed about 0.7nm away to port and 100ft above their ac at the closest point. Having consulted on-board systems to confirm, via GPS, that they were operating within Class G airspace, and with both crewmembers satisfied that safe visual separation was maintained throughout, no avoiding action was deemed necessary. The sightline rate across the canopy also confirmed that they were not on a collision course with the SF34. Both crewmembers maintained visual contact and deconfliction with the other ac as they passed and throughout their repositioning until inbound to Tain AWR. He assessed the Risk as 'low'.

UKAB Note (1): The UKLFH promulgates details of military SAR Helicopter Night Training Areas (HNTAs) for the benefit of military crews. The Tain Range Operating Area (Class G airspace outside the AWR) abuts the Lossiemouth HNTA (2), which extends from the surface to 2000ft asl/agl. FW ac are required to overfly the area not below 2000ft, with RW traffic restricted to operating below 1500ft.

**THE INVERNESS COMBINED TOWER AND AERODROME CONTROLLER** reports that the SF34 crew had been cleared to carry-out the VOR/DME procedure for an ILS to RW23 under a PS. As they did so a return was observed on the ATM exiting Tain AWR on a SW'ly heading indicating 2600ft Mode C. He advised the SF34 pilot, who responded that the contact was showing on his TCAS display in his 12 o'clock. The SF34 pilot continued descent on the procedure and then at 1955 UTC advised he had received a TA on the other ac, which was believed to be a Tornado GR4. He believed the GR4 passed down the SF34's port side at a range of 1nm. The SF34 appeared to level-off but then the crew advised that the other ac had passed and they would continue on the procedure. The SF34 landed without further incident and it was then that the crew indicated that they wished to file an Airprox. The pilot later telephoned to confirm the details of the Airprox and advised that he had been flying in IMC at the time and had not seen the other ac.

**ATSI** reports that the Airprox occurred at 1955UTC, with the SF34 on the 029 INS VOR radial at 7D, at an altitude of 3000ft.

The SF34 was an IFR flight inbound to Inverness from Stornaway, routing via ADR W6D and the INS-VOR for an ILS approach to RW23. Inverness were operating TOWER and APPROACH (APP) combined, without the aid of surveillance equipment.

The 1950Z Inverness METAR gave: 24006KT 9999 BKN030 09/07 Q0992=.

NATS Ltd radar recordings from SAC (Prestwick) do not show both ac during the period of the Airprox. [Recorded radar coverage below 4000ft is intermittent and the GR4 is not shown after 1954:41, when the contact fades.]

At 1939:20, more than 15min before the Airprox occurred, the GR4 crew called Inverness APP inbound to Tain Range requesting traffic information. APP advised the GR4 about another ac departing from Inverness en-route to the ADN VOR, which the GR4 crew acknowledged and advised going en-route at 3000ft.

At 1946:32, the inbound SF34 called APP and reported 28nm to run, in receipt of information Lima, QNH 992mb and leaving FL135 descending to FL70. APP replied, "[SF34 C/S] *continue to the I-N-S expect no delay for the procedure from the overhead the ILS Runway 2-3 it's a procedural service for conspicuity squawk 6-1-77.*" This was acknowledged correctly by the SF34 crew who was given

further descent to an altitude of 5000ft. The SF34 crew reported at 12nm at 1950:34 and APP replied, “[SF34 C/S] *on passing 10 miles descend 3 thousand 5 hundred feet Q-N-H 9-9-2 cleared for the procedure from the overhead for [RW] 2-3 three report outbound.*” This was acknowledged correctly and APP then advised, “[SF34 C/S] *and report at any stage if you wish to continue visually.*”

At 1954:18, the SF34 crew reported beacon outbound and APP replied, “[SF34 C/S] *report established on the localiser Runway 2-3.*” Moments later at 1954:29 the APP controller advised, “*Traffic’s just appeared on the A-T-M [Aerodrome Traffic Monitor]...out of Tain Range heading southeast or rather southwest indicating 2 thousand 6 hundred feet but that’s obviously unverified.*” At this point the radar recording shows the distance between the two ac was 12.5nm with the SF34 indicating FL40 and the GR4 indicating FL31. The SF34 crew responded, “*That’s...copied we have...got something just coming into our 12 o’clock on TCAS [SF34 C/S]*”. Whereupon APP advised the SF34 crew that the traffic was believed to be a Tornado GR4 but was unable to confirm this, to which the crew replied, “*That’s copied looking [SF34 C/S]*”.

At 1955:59 the SF34 crew reported, “*Inverness [SF34 C/S] we just...we just get (sic)...a Traffic Advisory on that one it’s...gone behind us now.*” At this point the radar recording shows the SF34 8.7nm NNE of Inverness outbound on the procedure and indicating a climb at FL37. However, the GR4 has already faded from radar coverage. The APP controller acknowledged the call and instructed the SF34 to report established on the LLZ, whereupon the SF34 continued inbound for a normal approach and landing.

The SF34 was in receipt of a Procedural Service and the Inverness APP controller passed a warning regarding traffic believed to be a Tornado GR4 leaving the Tain Air Weapons Range. The Manual of Air Traffic Services MATS Part1, Section 1, Chapter 11, Page 10, paragraph 6, states:

‘A Procedural Service is an ATS where, in addition to the provisions of a Basic Service the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.’

UKAB Note (2): The SF34 is shown outbound on the SAC (Prestwick) radar recording level at FL40 but fades just after coasting out. The SF34 is shown intermittently thereafter as A0000 – SSR data unreliable, before a good SSR contact reappears at 1955:41 indicating 3600ft Mode C (1013mb) – about 3270ft Inverness QNH (992mb). This is perceived to be about the point that the SF34 pilot reports that he initiated a slight climb as on the next sweep the ac is shown 100ft higher at 3700ft Mode C, but the GR4 is not shown at all. The minimum separation cannot, therefore, be determined. Radar contact on the SF34, indicating 3700ft, is lost after 1955:59, the time the SF34 pilot reported the TA to APP.

**HQ 1GP BM SM** reports that although the Tornado GR4 crew was operating with Tain AWR and in communication with the Range at the time of the Airprox, no mention was made on RT of the encounter with the SF34. Moreover, the Airprox occurred outside the AWR. Therefore BM SM has nothing further to add to the investigation of this Airprox.

**HQ AIR (OPS)** comments that the GR4 was operating VMC in Class G airspace. The crew saw the SF34 and avoided it by a safe distance.

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

Information available included reports from the pilots of both ac, a transcript of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

It was apparent that this was a relatively straightforward night encounter between an IFR commercial flight executing an IFR approach procedure under a PS, and the GR4 conducting a training flight in and around Tain AWR. The GR4 crew was operating under VFR without an ATS, which was entirely within the crew's remit. Thus each flight was legitimately proceeding about their respective tasks in the shared environment of Class G airspace where 'see and avoid' prevailed. A CAT pilot Member observed that the GR4 crew was assiduously avoiding the SAR HNTA and questioned whether it would have been feasible for them to avoid the airspace surrounding the Inverness instrument approach procedures as well. The Air Command fast-jet Member explained that the HNTA was active during known periods and it was simple to avoid that defined airspace vertically. Given that no CAS encompassed these instrument approaches and the GR4 crew would not know where or when commercial traffic was flying in and out of Inverness, it was impractical and unnecessary to avoid this shared airspace all the time, whilst legitimately operating under 'see and avoid'.

At this time of day the SF34 crew was only able to obtain a PS from Inverness ATC, the controller operating TOWER and APP combined being unable to proffer a radar service despite the Unit being equipped with an ASR. The Board was disappointed that a surveillance radar based ATS was not available for commercial flights throughout the Airport's operating hours, which is the Unit's ultimate aim. A controller Member postulated that some ATSUs at regional airports have difficulty training and retaining sufficient staff qualified in radar duties to provide a radar service throughout their notified hours. In the Board's view, the alert Inverness controller made sensible use of the ATM available to him in the VCR by providing an early general warning to the SF34 crew about the GR4 when he detected it routing up the Firth some 12nm away from the SF34. The SF34 crew had detected the jet on their TCAS display at about the same time. Thus forewarned, the SF34 pilot was able to assess the GR4's level and take it into account whilst descending in IMC through the thin layers of cloud. This permitted the SF34 pilot to judge his RoD such that he could afford the GR4 as wider berth as was feasible vertically, based on TCAS, whilst endeavouring to spot it visually.

Although the GR4 crew had wisely called Inverness inbound to the AWR more than 15min before the Airprox occurred to obtain traffic information, some CAT Members thought they should have called again for an update. The crew were working Tain Range on UHF and it might have been feasible to call Inverness on VHF again at this stage, prior to turning into the AWR. The Air Command Member agreed that it would have been better airmanship if the GR4 crew had called ATC, but only if they had the capacity to do so; whilst setting up for their next run on a new target within Tain range their workload would have been quite high. Nevertheless, a CAT pilot Member suggested it would have been worthwhile if the GR4 crew had called on the frequency later, when able, to advise that they had seen the SF34, which might have reassured the crew. As it was, the SF34 would have been easy to detect on NVGs; the outline of the SF34 would have been plain to see and they would have had no difficulty in keeping sight of it and maintaining SA, but the Air Command Member accepted that it would have been more difficult to assess the distance between them accurately on NVGs. The GR4 pilot reports sighting the SF34 about 2nm away and avoiding it visually by a safe distance – 0.7nm he reported - not much less than the SF34 pilot's estimate of 1nm from his TCAS display, which also showed the vertical separation was 400ft as it passed clear to port. CAT pilot Members supported the SF34 pilot's decision to reduce his RoD and then enter a slight climb away from the GR4's indicated level until the Tornado had passed, a 100ft climb being replicated by the radar recording. Given that TCAS is inherently more accurate in the vertical plane than in azimuth, this seemed wise and forestalled a closer encounter. It was unfortunate that the GR4 was not within recorded radar coverage during the latter stages of this Airprox so it was not feasible to confirm the relative geometry that obtained here to assist the Board's assessment of the Cause and Risk. Whilst some Members perceived this to be a Conflict in Class G airspace resolved by the SF34 pilot, others were of the view that no actual conflict had developed at close quarters and that the GR4 had crossed ahead of the SF34 at range and passed clear to port. Both crews had been aware of the presence of each other's ac, but whilst the SF34 pilot might not have considered the separation to be ideal, Members noted that TCAS was not called upon intercede. The SF34 crew had only received a traffic alert, which had not developed into an RA. The Board concluded, therefore, that this Airprox resulted because the GR4 crew flew close enough to the SF34 to cause its crew concern, but that no Risk of a collision had existed.

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

Cause: The GR4 crew flew close enough to the SF34 to cause its crew concern.

Degree of Risk: C.