AIRPROX REPORT No 2011025

Date/Time:	30 Mar 2011 1238Z		
Position:	5816N 00330W (17nm SW WIK)		
Airspace:	N560D	(*Class: F*)	
	Reporting Ac	*Reported Ac*	
Type:	SF 340	Tornado GR4	
Operator:	CAT	HQ Air (Ops)	See Diagrams below
Alt/FL:	FL80	FL075	
Weather:	VMC CLBL	VMC CLBL (4000ft above cloud)	
Visibility:	NK	10km	

Reported Separation:

0ft V/1nm H 500ft V/3nm H

Recorded Separation:

300ft V/2.8nm H

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SF 340 PILOT reports flying a passenger flight inbound to Kirkwall heading 043° on N560D at 230kt and FL80; they were squawking as directed with Modes C and S, nav lights and HISLS were on, and TCAS was fitted and serviceable. When they had about 30nm to run to WIK he saw a TCAS contact 6nm W of them just as the controller asked for their meteorological conditions; he replied, "VMC between layers". They were given an immediate turn on to 090°, followed by an avoiding action turn further R onto 120°; at that point he became visual with a single Tornado ac. They were then turned onto a heading of 180° as two more contacts appeared and he was given a further turn on to 270° to avoid them. When the ac was on track he became visual with two Tornados manoeuvring below them.

He reported the Airprox to ScACC and his company assessing the risk as being low.

THE TORNADO GR4 PILOT reports flying a singleton OCU low level training sortie in a grey ac with strobes and HISLs switched on; TCAS was not fitted. They were squawking 7001 with Modes C and S, heading 140° at roughly 300kt having broken off an attempt to prosecute a low level SAP on a heading of 065°, about 20nm W of Wick. Low cloud had forced a high workload emergency abort from low level at 1235; following the abort they levelled initially at 8000ft and set a heading of 140° for recovery to Kinloss for a booked practice diversion.

Aware of the proximity of Class F airspace SW of Wick, he contacted Lossie APP in order to obtain a radar service. While establishing radio contact with Lossiemouth at the edge of ADR N560D, they set 1013mb and descended to level at FL75 in order to be at the correct quadrantal FL. Prior to formal radar identification by ATC, Lossie APP informed them of civilian traffic 5nm ahead, crossing R to L, 100ft above. Lossie APP then informed them that the traffic was taking avoiding action, and at 1236:30 updated the position of the civilian traffic as being 2 o'clock at 3nm. At this point they observed the civilian traffic in the position called by ATC (3nm away and 500ft below), but they could not determine the ac type.

They perceived no confliction based on visual separation, but followed a subsequent air traffic recommendation to turn L onto a heading of 090°. The pilot was VMC throughout this incident.

The report was filed in response to an Airprox report believed filed by the civilian ac; he assessed the risk as low/none.

ScACC MORAY Planner/Tactical Controller reports that he was providing a SF 340 with a DS on N560D [Class F] inbound to Kirkwall. The ac had left FL90 and was descending to FL70 when he saw a 7001 squawk in the ac's 10 o'clock at about 5nm with no mode C. It appeared that the mode C was then activated by the military ac and it was showing FL072 climbing but on a roughly parallel track to the SF 340 heading. He asked the SF 3400 pilot for his flight conditions and he reported they were IFR [sic – see SF 340 pilot's report above] so he gave the ac a precautionary turn onto 090°. Almost immediately the military ac turned towards the SF 340 and commenced a further climb so he gave an avoiding action turn onto 120°. He did not consider a vertical solution as the military ac was climbing towards his traffic which was descending.

The SF 340 pilot then reported that he had the military ac on TCAS so the controller took no further action. By that time, the ac were very close and the STCA was flashing red. He then realised the SF 340 pilot had only stated he had the ac on TCAS but had not stated that he had a RA so he gave a further avoiding action turn onto a heading of 180°. Lossiemouth radar then called him but they were both too busy to co-ordinate with each other.

He then saw second pair of ac squawking 7001 that was also climbing out from the same area. As a precaution he turned the SF 340 away from these ac but he eventually managed to get co-ordination with Lossiemouth radar.

The controller asked the SF 340 pilot if he wished to file an Airprox and he said yes.

THE RAF LOSSIEMOUTH APP CONTROLLER (Lossie APP) reports a Tornado ac free-called on Stud 4 and she observed a fast moving track in the vicinity of its reported position. There was a further return about 5nm ahead of it and slightly above, displaying an ORCAM squawk, following the route of N560D. She called the ac to the Tornado, using the words 'traffic believed to be you has traffic' advising that the ac was indicating slightly above but descending. She gave the Tornado a Lossiemouth squawk and called the Moray Sector Controller (MOR) who answered almost immediately; she could hear the controller giving advice to the SF 340 involved, however, despite her best efforts she was unable to speak to the controller. She then formally identified the Tornado and placed it on a TS. Throughout her attempts to contact the MOR controller she continued to pass information to the Tornado regarding the other ac until the Tornado pilot reported "visual". The (Lossie) controller heard the MOR ask his ac whether or not he was 'still visual' but she could not effect co-ordination with MOR as the Controller was talking to the SF 340 continuously.

She believes that the ac came within approximately 3nm and 100ft – the height being based on the mode C readout. The civil traffic was given a RH turn from a NE'ly heading then through S onto NW so she asked the Tornado to head E, which took it further away from the civil traffic.

She heard the civil controller ask the SF 340 if he wished to file an Airprox, at which time she asked the Lossie Supervisor (Sup) to listen in. The Sup eventually managed to effect co-ordination on her behalf but by that time the ac were diverging; the Tornado to the E of N560D heading E and the SF 340 to the W of the ADR tracking N.

She handed the ac to Director for a radar-to-visual recovery and was relieved by another qualified controller.

UKAB Note (1): Both NATS and RAF Lossiemouth conducted comprehensive internal investigations; for brevity they have not been included as they are summarised in the ATSI and HQ 1Gp BM SM2 reports below.

ATSI reports that an Airprox was reported by the pilot of a SF 340 when it came into confliction with a Tornado, 17nm SW of WIK, as the SF 340 descended through FL080. The Airprox was also reported by the Prestwick Centre MORAY controller (MOR). The SF 340 was on a flight from Glasgow to

Kirkwall and in receipt of a DS from the MOR sector on 129.225MHz. The Tornado had been on a low level sortie when cloud forced an emergency low level abort and established contact with Lossiemouth APP in order to receive a radar service.

The MOR sector was being operated as a combined tactical and planner position, his workload was assessed as light to medium and there were no reported unserviceabilities or distracting factors.

ATSI had access to the SF 340 pilot's report, the Tornado pilot's report, the ScACC watch and unit investigations, recorded area surveillance and transcript of frequency 129.255MHz.

The SF 340 established contact with the MOR sector at 1221:40, the ac was maintaining FL170 and a DS was agreed; the SF 340 continued inbound WIK on ADR N560D and at 1230:20 it was descended to FL090 and 3 min later it was given further descent to FL070.

At 1235:35 a 7001 return (the Tornado) appeared on the display 11nm N of the SF 340 but initially there was no Mode C readout. The return initially tracked parallel to the SF 340 and the Tornado's Mode C initially showed as FL078 with the SF 340 descending through FL093.

At 1236:00 the MOR controller requested the SF 340's flight conditions and the pilot replied, "*between layers, VMC at the moment*". By 1236:04 the Tornado had commenced a right turn and was tracking perpendicular to the ADR at FL080. STCA activated at 1236:23 at which time the MOR provided TI as, "*pop-up traffic in your ten o'clock at a range of 5 miles",* followed by the instruction, "*turn right immediately heading 090 degrees".* The pilot read back the instruction and, at 1236:35, the controller upgraded this to, "*avoiding action turn right immediately onto a heading of 120 degrees"* and updated TI was provided.

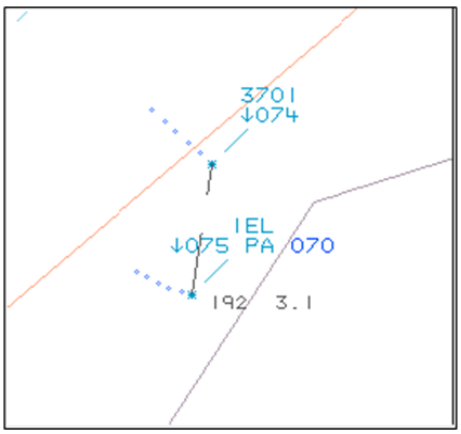
At 1236:49 a high-level STCA activated when the ac were 5nm apart on converging tracks, the SF 340 descending through FL082 and the Tornado maintaining FL082.

The SF 340 pilot then informed the controller, "a*nd have TCAS contact erm visual now"*.

The SF 340's right turn can be seen to take effect at 1236:58, at which time the STCA alert downgraded to low severity.

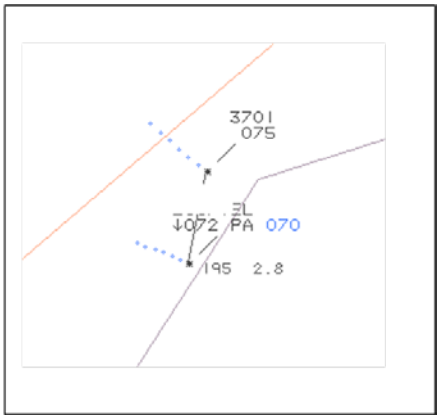
At 1237:00 the MOR controller initiated a call to Lossie APP. The line remained open as the MOR controller listened to the Lossiemouth controller who was then handling the Tornado. [See UKAB Note (2)]

At 1237:10 the Mode A code of the Tornado changed to 3701 (Lossiemouth) and by 1237:30 both ac were on parallel SE'ly tracks, 3.1nm apart, the SF 340 descending through FL075 and the Tornado descending through FL074 (see photo below).



(PC MRT 1237:30)

At 1237:20 the MOR controller asked the SF 340 pilot if they were still visual with the traffic. The pilot replied, "*Negative, we're in cloud now*". The controller then gave a right turn onto a heading of 180°. The minimum distance between the two ac was 2.8nm laterally, 300 feet vertically, at 1237:40.



(PC MRT 1237:40)

By 1238:00 the Tornado had taken up an E'ly track and the SF 340 was instructed to continue its right turn and resume own navigation to Kirkwall. It was only at this time that the workload of the Lossiemouth controller permitted co-ordination with the MOR controller.

The MOR controller correctly noted that although the SF 340 pilot had reported visual and having TCAS contact, an RA had not been reported. These facts had prompted him to ascertain if the SF 340 had remained visual with the Tornado; when the response was negative, he gave further avoiding action as necessary.

The CPA occurred 17nm SW of WIK in Class F advisory airspace between a SF 340 at FL072 and a Tornado at FL075. Minimum lateral distance was 2.8nm.

The Tornado had aborted a low level sortie and sought the assistance of Lossie APP during its recovery. During this time it came into confliction with the SF 340 NE bound on the ADR. The PC MOR controller observed the emergency climb out and instructed the SF 340 accordingly.

Controllers providing a DS will provide specific surveillance derived TI and issue headings and/or levels aimed at achieving planned deconfliction minima. MATS Pt 1 stipulates that against un-co-ordinated traffic the planned deconfliction minima is 5nm or 3000ft. Whilst the deconfliction minima were not achieved in this case the following actions mitigated and minimised the impact of the encounter:

Prompt TI by the MOR controller.

The MOR controller followed the actions of the Lossie APP on an open telephone line, thus providing complementary instructions to the SF 340.

Recognising that an RA had not been reported by the SF 340 the controller updated the avoiding action as necessary.

BM Safety Management reports (abridged to avoid duplication) that following the Tornado's initial call, Lossie APP was able to correlate their radar return with its reported position and immediately passed TI on the SF 340 stating, "*traffic south, 5 miles right to left, indicating slightly above descending, civil traffic just 100ft above descending*"; at that point the SF 340 was bearing 187°, 6.8nm from it and descending through FL085. Shortly thereafter [1236.58 from Lossie APP transcript] APP rang MOR and although the call was answered immediately, the MOR controller was too busy initially to conduct any liaison.

At 1236:45 it is evident on the radar replay that the SF 340 has turned right, eventually rolling out onto a SE'ly track. Throughout the incident sequence APP continued to pass TI to the Tornado on the SF 340 and then at 1237:23 suggested a left turn onto E to increase the separation between the ac. At that point the SF 340 was 3.5nm SSW of the Tornado and both ac were indicating FL075. Moreover it is around that point that the Tornado crew became visual with the SF 340, reporting as such at 1237:31.

At 1237:44 the Tornado's turn onto E is evident on radar and coincides with the CPA, with 2.8nm lateral and 300ft vertical separation existing.

The Tornado crew correctly prioritised the low-level abort and, once established at a safe level and cognisant of the presence of the ADR, contacted APP for a radar service. APP provided a good level of service to the Tornado passing accurate TI allowing them to visually acquire the SF 340 in good time but, conscious of the MOR controller's responsibilities and the difficulty in establishing liaison with him, also suggested a turn onto E to increase separation between the 2 ac.

This was a confliction in uncontrolled airspace where the safety barriers provided on the one hand by the provision of TI in aiding aircrew to 'see and avoid' and on the other by the provision of deconfliction advice iaw CAP 774, resolved the situation before safety was compromised.

UKAB Note (2): The Tornado first show on the PC MRT at 1235:35 as a 7001 squawk with no Mode C. The Tornado called Lossiemouth at 1236:20 with the call sequence being completed 6sec later and the first TI on the SF 340 was passed a further 8sec later. Analysis of the respective transcripts shows that MOR and Lossie APP initiated calls to one another at precisely the same time (1236:58). The call however, was not answered by the MOR controller until 1238:20 (to the nearest 20 sec). The MOR RT transcript shows that RT frequency was in continuous use from 1237:20 to 1238:20; the Loss APP frequency was busy continuously from 1236:19 to 1238:04. The CPA was at 1237:40.

UKAB Note (3): The analysis of the PC MRT radar recording confirmed the analysis conducted by ATSI above (and NATS). The pair of Tornados mentioned by the SF 340 pilot cross from L to R under the SF 340 well after the Airprox (3½ min) when the SF 340 is re-established inbound WIK, 5nm W of the ADR C/L; they are never above FL040 (3000ft below the SF340)

HQ AIR (OPS) comments that the Tornado crew correctly prioritised the need to conduct a Low Level Abort before the need to avoid the Class F airspace. They then sought to obtain a radar service as soon as was practical; perhaps a call to ScACC Mil on the ICF would have allowed quicker coordination with ScACC MOR given the co-location of those 2 agencies. Nevertheless, the ScACC controller reacted promptly to the pop up traffic and gave avoiding action to prevent a further erosion of separation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

A majority of Members agreed that this had been a potential conflict on a Class F ADR, recognised as such as soon as it became apparent by both controllers, who acted swiftly and correctly to resolve the situation, preventing any actual conflict or risk of collision.

Pilot Members noted that the Tornado crew had demonstrated good awareness of the ADR, acted appropriately by being predictable (to the controllers) and crossing it at right angles and level at the (lowest) appropriate quadrantal FL. Further, as soon as they had the capacity following the emergency climb out from Low Level, the Tornado crew contacted the appropriate Radar Unit (Lossie App is the local LARS unit) for assistance. Members observed that although ScACC and ScACC (Mil) are co-located at Prestwick Centre, the respective controllers are not adjacent; co-

ordination would still have required a telephone call and would not have been any quicker had the Tornado crew called ScACC (Mil) rather than Lossie App.

Controller Members also observed that both controllers had, in their opinion, acted quickly and correctly, not allowing a conflict to develop. Although the Moray Sector controller did not achieve the desired deconfliction parameters, Members agreed that in the circumstances, he could not have done any more. Members also noted that both Controllers had initiated calls to each other at about the same time but at the precise moment of the calls, both had been too busy to initiate co-ordination; the open line however had been useful in that it allowed them both at least some information on each other's actions.

Members also observed that the ScACC controller had noted quickly that the Saab was not reacting to a TCAS RA, merely that he had a TCAS contact for the Tornado; on realising this he immediately acted by attempting to gain the desired (horizontal) separation from the latter. TCAS terminology for pilots had been the subject of a previous UKAB Recommendation (2010018) resulting in the CAA issuing Safety Notice SN-2011/012 of 8 Sep 2011.

Members discussed at length the risk associated with the incident and whether it should be classified as risk Category C or E. While everyone agreed that the actions taken by the aircrew and controllers had removed the risk of a collision, the controllers were required to work hard and had difficulty in coordinating their actions; furthermore despite being given avoiding action the S340 did not maintain 5nm/3000ft separation from the Tornado and there was confusion over whether the S340 was responding to a TCAS RA. These factors were enough to satisfy some Members that the event had been an Airprox with a Risk Category C. Other Members opined that the event was a routine event for this type of airspace and normal procedures, safety standards and parameters had pertained; therefore it would be misleading to consider it to be an Airprox event. The latter view prevailed by a small majority.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A potential conflict resolved by both controllers.

Degree of Risk: E.