

## AIRPROX REPORT No 2013028

Date/Time: 01 May 2013 0850Z

Position: 5405N 00039W  
5nm SE Malton

Airspace: Vale of York AIAA (Class: G)

Reporting Ac      Reported Ac

Type: Typhoon FGR4      Tucano T1

Operator: HQ Air Ops      HQ Air Trg

Alt/FL: 9000ft      FL80  
RPS (1020hPa)

Weather: VMC NR      VMC CLAH

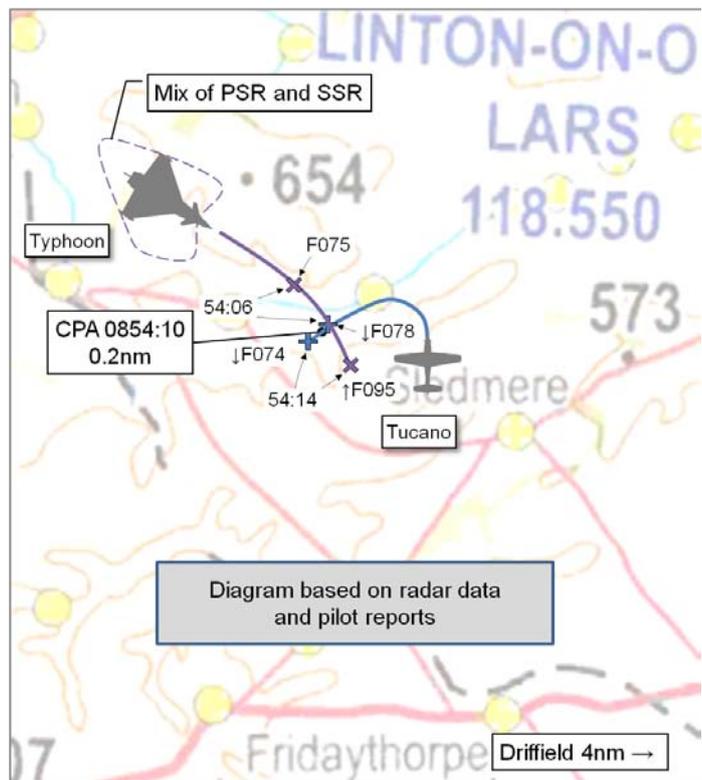
Visibility: 40km      30km

Reported Separation:

700ft V/0nm H      1000ft V/0nm H

Recorded Separation:

NK V/0.2nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE TYPHOON PILOT** reports leading a 3-ship formation, conducting visual Air Combat Manoeuvring (ACM) in the Vale of York AIAA. They were operating under VFR in VMC with a BS from LATCC(Mil), he thought. The ac was predominantly grey camouflaged, with a green, red and yellow painted fuselage spine and tail fin. Navigation lights and HISLs were selected on, as was the SSR transponder with Modes A and C. The ac was not fitted with an ACAS. After terminating the last training serial, and as the formation was rejoining into close formation, he saw a Tucano ac approximately level and 1nm directly ahead. He was heading S at 300kt and about 10000ft and assessed the Tucano to be tracking in a W'yly direction. He called the formation to climb and gave TI to the rest of the formation who all quickly became visual with the Tucano. He was the closest member of the formation and assessed he passed 700ft directly above it. At no point prior to the incident had the formation received any information calls from London regarding this traffic. The Airprox was relayed to LATCC(Mil) via telephone on landing.

He perceived the severity of the occurrence as 'High'.

**THE TUCANO PILOT** reports conducting an instructor check sortie in the Vale of York AIAA. She was sitting in the front, with the instructor student in the back, operating without an ATS under VFR in VMC. The black and yellow ac had landing lights, navigation lights and strobe lights selected on, as was the SSR transponder with Modes A and C. The ac was fitted with TCAS I. As she was setting up for a stall, she became aware of several TCAS contacts several miles to the NW of her position. She started to turn S, away from the contacts, when she became visual with 2 Typhoons flying in trail at approximately her level, which seemed to be conducting ACM. Due to their proximity and their continued manoeuvring, she elected to abandon the stall set up and manoeuvred to maintain visual contact. Shortly afterwards, turning through W at 100kt, the leading Typhoon pilot appeared to gain visual with her ac, positively changed heading and height, and passed about 1000ft above.

She perceived the severity of the occurrence as 'Low'.

[UKAB Note(1): The LATCC(Mil) R/T transcript is reproduced below. The Typhoon formation was initially composed of 4 ac divided in pairs into 2 Flights, each with an individual C/S (labelled 'Flight1')

and 'Flight2' below). For example, Alpha, C/S Alpha 11 Flight, consisting of ac C/S Alpha 11 and Alpha 12, and Beta, C/S Beta 21 Flight, consisting of ac C/S Beta 21 and Beta 22.

<b>From</b>	<b>To</b>	<b>Speech Transcription</b>	<b>Time</b>	<b>Remarks</b>
Flight1 Ldr	NE	London Military good morning [Flight1 C/S], [Flight2 C/S] combined standard height standard formation 120 Radar Control	08:01:16	
Flight1 Ldr	NE	London Mil [Flight1 C/S], [Flight2 C/S] on handover FL120	08:01:39	
NE	Flight1 Ldr	[Flight1 C/S] [Flight2 C/S] combined London Mil identified climbing FL120 Traffic Service	08:01:44	
Flight1 Ldr	NE	[Flight1 C/S] Traffic Service, looking for Vale of York in the block 5 to 350 on this discrete with you MARSAs in formation	08:01:50	
NE	Flight1 Ldr	[Flight1 C/S] that's copied own navigation	08:02:00	
Flight1 Ldr	NE	Own Nav many thanks [Flight1 C/S]	08:02:02	
NE	Flight1 Ldr	[Flight1 C/S] Hiblestow has just gone active	08:02:32	
Flight1 Ldr	NE	[Flight1 C/S] Copied	08:02:36	
NE	Flight1 Ldr	[Flight1 C/S], London Mil	08:03:18	
Flight1 Ldr	NE	Go Ahead	08:03:20	
NE	Flight1 Ldr	[Flight1 C/S] are you able to restrict your altitude to 24 thousand feet when you manoeuvre due to the upper air route	08:03:22	
Flight1 Ldr	NE	[Flight1 C/S] um.. affirm er.. if able we'd like to take up to 300 though	08:03:35	
NE	Flight1 Ldr	[Flight1 C/S] if you require higher would you erm.. like to book the East Anglian MTA	08:04:37	
Flight1 Ldr	NE	[Flight1 C/S] negative we'll erm.. maintain below 240 in that case	08:04:43	
NE	Flight1 Ldr	[Flight1 C/S] roger report ready to manoeuvre	08:04:48	
Flight1 Ldr	NE	[Flight1 C/S] ready manoeuvre	08:04:50	
NE	Flight1 Ldr	[Flight1 C/S] manoeuvre as required between 5 Thousand and 24 Thousand feet the Barnsley pressure 1020 report one minute to completion	08:04:54	

From	To	Speech Transcription	Time	Remarks
Flight1 Ldr	NE	Wilco 1020 Set, [Flight1 C/S] [Flight2 C/S] combined	08:05:04	
Formation		[Internal Communications]	08:08:06	
NE	Flight2 Ldr	[Flight2 C/S] maintain outside controlled airspace	08:08:36	
Flight2 Ldr	NE	[Flight2 C/S] Roger	08:08:40	
Formation		[Internal Communications]	08:08:48	
NE	Flight1 Ldr	[Flight1 C/S] Traffic North West 5 Miles tracking East FL100	08:09:00	
Flight1 Ldr	NE	Traffic Copied	08:09:09	
Formation		[Internal Communications]	08:09:17	
NE	Flight1 Ldr	[Flight1 C/S] further traffic South West 3 Miles tracking North East indicating er.. correction at FL75	08:09:30	
Flight1 Ldr	NE	Traffics copied	08:09:38	
Flight1 Ldr		[Internal Communications]	08:09:45	
NE	Flight1 No2	[Flight1 No2 C/S] re-set squawk 6051	08:11:06	
Flight1 No2	NE	6051 [Flight1 No2 C/S]	08:11:12	
Formation		[Internal Communications]	08:11:15	
NE	Flight1 Ldr	[Flight1 C/S] , London Mil	08:19:17	
Flight1 Ldr	NE	Go Ahead	08:19:19	
NE	Flight1 Ldr	[Flight1 C/S] are you able to manoeuvre a little bit further west of your current position? I've just got Deconfliction service civvy traffic its err.. inbound to Humberside. I'm err. Routing up the coastline at the moment.	08:19:20	
Flight1 Ldr	NE	[Flight1 C/S] Affirm. We'll move approximately ten miles further to the west	08:19:29	
NE	Flight1 Ldr	[Flight1 C/S] Roger, Thank you	08:19:35	
Formation		[Internal Communications]	08:20:30	
NE	Flight1 Ldr	[Flight1 C/S] Traffic North West 7 Miles manoeuvring passing FL85 climbing	08:24:11	
Formation		[Internal Communications]	08:24:17	
NE	Flight1 Ldr	[Flight1 C/S] Coningsby are now Waddington VFR	08:27:37	

From	To	Speech Transcription	Time	Remarks
Flight1 Ldr	NE	[Flight1 C/S] copied, Many thanks	08:27:42	
Formation		[Internal Communications]	08:27:46	
NE	Flight1 Ldr	[Flight1 C/S] Traffic North East 4 Miles Tracking South East FL85	08:33:48	
Flight1 Ldr	NE	[Flight1 C/S] Copied	08:33:55	
NE	Flight1 Ldr	[Flight1 C/S] Apologies the previous called traffic is tracking South West	08:33:59	
Flight1 Ldr	NE	[Flight1 C/S]	08:34:04	
Formation		[Internal Communications]	08:34:17	
Other ac	NE	[Other ac C/S] Level FL150	08:44:22	
NE	Flight1 Ldr	Flight1 Ldr Traffic North West 15 Miles tracking South East single Hawk, Inbound Donna Nook, at FL150, under my control	08:44:59	
Flight1 Ldr	NE	[Flight1 C/S], [Flight2 C/S] copied	08:45:09	
NE	Other ac	[Other ac C/S] traffic South East 15 Miles, manoeuvring, it's a pair of correction 4 Eurofighters under my control passing 150 manoeuvring in the block	08:45:13	
Other ac	NE	[Other ac C/S] Roger	08:45:25	
NE	Other ac	[Other ac C/S] The previously called Typhoon traffic South East 5 Miles Manoeuvring believed to be a pair	08:46:01	
Other ac	NE	[Other ac C/S] Roger looking. If you could keep me updated	08:46:09	
Formation		[Internal Communications]	08:46:11	
Other ac	NE	London, [Other ac C/S]. Could you confirm its just 2 Typhoons with you ?????	08:46:42	(last part garbled)
Flight1 Ldr	NE	London Military [Flight1 Ldr C/S] has err.. minor unserviceability I'm looking to go in position south of Coningsby for Approximately 10 Mikes it's err.. General Handling	08:46:44	
NE	Flight1 Ldr	[Flight1 Ldr C/S] that's copied and just confirm that's [Flight1 Ldr C/S] singleton	08:46:55	

From	To	Speech Transcription	Time	Remarks
Flight1 Ldr	NE	Yeah Affirm, its [Flight1 Ldr C/S] only. [Flight2 Ldr, No2 C/S] and [Flight1 No2 C/S] will be remaining. [Flight2 Ldr C/S] has the pack lead of that formation	08:46:58	
NE	Flight1 Ldr	[Flight1 Ldr C/S] that's copied and request your level for transit	08:47:07	
Flight1 Ldr	NE	[Flight1 Ldr C/S] is descending FL100 to transit south of Coningsby by 15 miles	08:47:10	
NE	Flight1 Ldr	And [Flight1 Ldr C/S] roger there is traffic err.. North West 2 Miles tracking South East, similar heading, single Hawk at FL150, going to Donna Nook	08:47:15	
Flight1 Ldr	NE	[Flight1 C/S] err.. that's copied I'll descend FL100 now, Radar contact that traffic	08:47:25	
NE	Flight1 Ldr	[Flight1 Ldr C/S] Roger	08:47:31	
NE	Other ac	[Other ac C/S] traffic South East 3 Miles manoeuvring, single Typhoon, has you on radar, in the descent FL100	08:47:33	
Other ac	NE	[Other ac C/S] Tally too	08:47:41	
????		Radar Contact	08:47:51	Unknown transmission
Other ac	NE	And London [Other ac C/S] Happy to go VFR en-route now, I've got Humberside on the other radio	08:48:02	
NE	Other ac	[Other ac C/S] Roger squawk as required, change en-route	08:48:13	
Other ac	NE	[Other ac C/S]	08:48:15	
NE	Flight1 Ldr	[Flight1 Ldr C/S], London Mil. Can you just confirm what you're descending too?	08:48:30	
Flight1 Ldr	NE	[Flight1 Ldr C/S] descending FL100	0848:34	
NE	Flight1 Ldr	[Flight1 Ldr C/S] Roger, you're showing FL85	08:48:37	
Flight1 Ldr	NE	OK [Flight1 Ldr C/S] Level FL100 re-cycling	08:48:42	
NE	Flight1 Ldr	[Flight1 Ldr C/S] Squawk 1746	08:49:02	
Flight1 Ldr	NE	1746...and [Flight1 Ldr C/S] are you able to give me my split range to [Flight2 C/S] at this time please	08:49:05	

From	To	Speech Transcription	Time	Remarks
NE	Flight1 Ldr	[Flight1 Ldr C/S] Standby	08:49:11	
NE	Flight1 Ldr	[Flight1 Ldr C/S], [Flight2 C/S] range 18 Miles	08:49:15	
Flight1 Ldr	NE	Copied that, thank you	08:49:18	
NE	Flight1 Ldr	And [Flight1 Ldr C/S] Hiblestow is active	08:49:20	
Flight1 Ldr	NE	[Flight1 C/S] copied routing to the East	08:49:24	
Flight1 Ldr	NE	London [Flight1 C/S] is err.. happy to switch Coningsby when able, many thanks	08:50:07	
NE	Flight1 Ldr	[Flight1 Ldr C/S] Roger, Contact Coningsby Approach Stud 4	08:50:12	
Flight1 Ldr	NE	Stud 4, G'Day [Flight1 Ldr C/S]	08:50:14	
Flight2 Ldr	NE	London [Flight2 C/S]	08:50:17	
NE	Flight2 Ldr	[Flight2 Ldr C/S] Flight London Mil pass message	08:50:21	
Flight2 Ldr	NE	Copied, currently now a Flight of 3 erm also has the [Flight1 No2 C/S] already operating ACT, for approximately 5 minutes in the local area before recovering to Coningsby	08:50:22	
NE	Flight2 Ldr	[Flight2 Ldr C/S] apologies say again last	08:50:37	
Flight2 Ldr	NE	Copied were holding hands now with [Flight1 No2 C/S] we'll maintain as a formation to conduct PFM(?) before recovering to Coningsby	08:50:39	
NE	Flight2 Ldr	[Flight2 C/S] that's copied [Flight1 No2 C/S] has the lead, all other elements squawk standby	08:50:47	
Flight2 Ldr	NE	Negative err.. [Flight2 Ldr C/S] has the lead other elements can squawk standby	08:50:52	
NE	Flight2 Ldr	[Flight2 Ldr C/S] that's copied, all other elements squawk standby	08:50:57	
??	??	[Flight2 C/S]	08:52:38	One word transmission
Formation		[Internal Communications]	08:53:06	
NE	Flight2 Ldr	[Flight2 C/S], Traffic South East 4 Miles manoeuvring FL 80	08:55:00	
Flight2 Ldr	NE	[Flight2 C/S] visual with that traffic	08:55:06	

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**BM SAFETY POLICY AND ASSURANCE** reports that this Airprox occurred within the Vale of York AIAA at 0854:12 on 1 May 13 between a formation of 3 x Typhoon FGR4 and a Tucano. The Tucano was operating autonomously under VFR conducting an instructional sortie; the Typhoon Formation was conducting 2v1 ACM in receipt of a TS from LATCC(Mil) NE Tac.

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated.

The LATCC(Mil) NE Sector was manned by trainees and instructors in both the Tac and Planner roles. Whilst the NE Tac trainee was relatively inexperienced, the Planner trainee and both instructors were experienced area controllers. NE Tac did not assess the workload nor task complexity that they were exposed to; however, the unit's investigation determined that the complexity of NE Tac's task-load and increased traffic levels in the Vale of York generated a high workload and reduced his capacity to provide an effective ATS. NE Tac did not report the length of time that he had been on console at the time of the incident; however, analysis of the R/T transcript indicates that they had been on console for at least 54min and that the task-load had been consistently medium to high throughout this time.

Having come onto NE Tac's frequency at 0801:16, the Typhoon Formation were operating as a combine of 2 pairs, each pair having different C/S, conducting 2v2 ACM, with all ac assigned individual SSR3A codes; however, a minor unserviceability caused the Leader (Typhoon 1) to return to Coningsby, leaving the formation at 0846:44. Figure 1 shows the traffic picture around the Typhoon Formation at this point, including 3 Tucanos operating autonomously under VFR utilising SSR 3A 4577. The incident sequence can be deemed to have started at 0850:39 as the new Typhoon Formation Leader (Typhoon 3) advised NE Tac that they were, "holding hands now with [Typhoon 2 C/S] we'll maintain as a formation to conduct B-F-M before recovering to Coningsby". Temporarily, this increased NE Tac's workload by adding an additional speaking unit and the requirement to divide their attention over a wider geographical area; however, by 0850:57, this situation had been resolved, leaving NE Tac providing ATS to the Typhoon Formation, working as a single speaking unit on a discrete UHF manoeuvring between 5 and 24000ft on the Barnsley RPS, and an un-related E3 Sentry in the upper air transiting to UK Orbit Area 5.

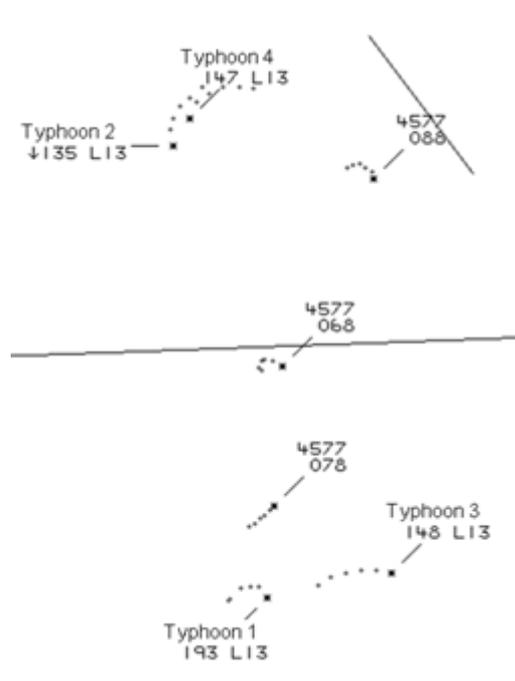


Figure 1: Vale of York traffic picture at 0846:44.

Between 0850:57 and the time of the CPA, NE Tac was involved in 2 short exchanges of R/T with a Sentry ac, between 0851:06 and 0851:20 and 0852:54 and 0852:57. At 0853:06 there was a 2sec internal transmission between the Typhoon Formation; however, NE Tac passed no TI to the Typhoon Formation on any conflicting traffic until after the CPA. Further analysis of the R/T transcript and radar replay determined that throughout the Typhoon Formation's sortie there were occasions where AIAA VFR traffic was within 5nm laterally of the Formation and within their vertical manoeuvring block; however, opportunities to pass TI were not taken.

The conflict between the Typhoon Formation and the Tucano began to develop from 0852:30. A PSR, believed to be associated with one of the other 2 elements of the Typhoon Formation is visible on the replay 1.5nm E of the leader. The Tucano was 3.8nm SE of the Typhoon Formation leader (Typhoon 3), tracking ENE'y, indicating a climb through FL88; the Typhoon Formation leader was tracking SE'y indicating FL148. Figure 2 depicts the incident geometry at this point.

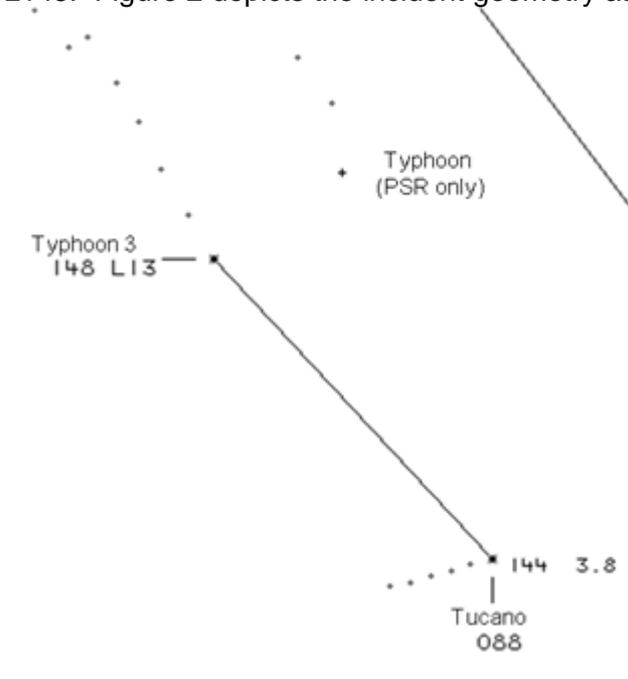


Figure 2: Incident Geometry at 0852:30.

At 0852:46, the Typhoon Formation leader initiated a hard R turn, leading to a series of lateral and vertical manoeuvres resulting, at 0853:14, in the loss of SSR Mode C information as the ac descended through FL99. The PSR only contact, believed to be associated with one of the other elements of the Typhoon formation, had continued the SE'y track until 0853:03 but then dropped out of surveillance coverage. At 0853:14, the Tucano was 3.5nm ESE of the Typhoon Formation leader in a L turn, passing through N, indicating descent through FL84; the Typhoon was in a L turn, passing through W. At 0853:34, the Tucano pilot steadied on a WSW'y track, indicating a descent through FL80, 2.9nm SE of the Typhoon Formation leader.

At 0854:02 the Typhoon Formation leader steadied on a SE'y track, 0.7nm NW of the Tucano. The SSR Mode C information indicated FL75 with the Tucano tracking WSW'y, indicating descent through FL78. Figure 3 depicts the incident geometry at this point.

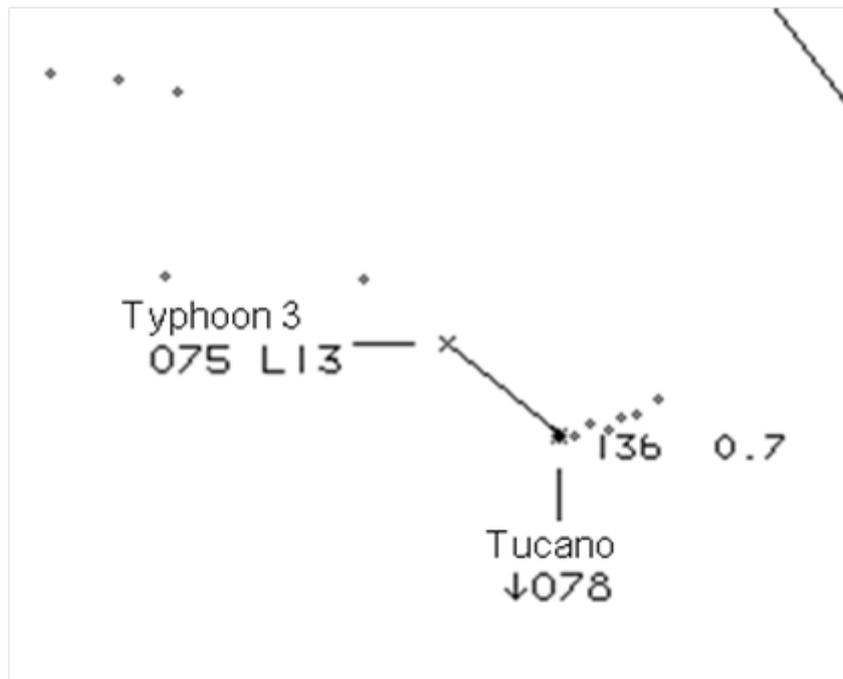


Figure 3: Incident Geometry at 0854:02.

As the ac approach the CPA there is some track jitter evident; however, based on comparison of the crew's reports and the radar data, the CPA occurred at approximately 0854:10 as the Typhoon Formation leader climbed above the Tucano, passing approximately 0.2nm E and behind it. At 0854:10, both the Typhoon Formation leader and the Tucano indicated FL75; at the next sweep of the radar at 0854:14, the Typhoon is 0.5nm ESE of the Tucano indicating a climb through FL95; the Tucano indicating descent through FL74. The Typhoon Formation leader reported visually acquiring the Tucano with 1nm lateral separation existing. The Tucano pilot reported that she was first alerted to the presence of the Typhoon Formation 'several miles to the NW of [her] position' by TCAS and then became visual with 2 Typhoons flying in trail. Although it is not possible to determine the range at which the acquisition occurred, based on the available information, it is worthy of note that the Tucano pilot was only visual with 2 of the 3 Typhoons.

Notwithstanding aircrews' responsibility to 'see and avoid' and the Typhoon formation leader's confusion over the type of ATS of which they were in receipt, given that the TS had not been reduced, the formation had a reasonable expectation of receiving TI; unfortunately, this did not occur. It was pleasing to note the steps forward that the unit had taken in recent months in terms of the depth of analysis conducted during their detailed investigation. The unit focussed on the interaction between the personnel operating on the NE Sector, specifically the level of supervision that was afforded to the inexperienced trainee Tac. The unit determined that the supervision of the trainee Tac and the Sector generally was insufficient for the situation, especially given that there was also a trainee Planner in place. Specifically, the unit concluded that the trainee had been distracted by operationally related conversations that had taken place between the 2 instructors, the Tac instructor and the trainee Planner and that the trainee's task-load had not been managed effectively. The unit also identified the parallels between this incident and other Airprox in 2012 involving LATCC(Mil). In these, controllers did not appear to appreciate the dynamic manoeuvring ability of fast jet traffic and were not providing TI where conflicting ac were within 5nm laterally of the manoeuvring traffic and within their vertical manoeuvring block. BM SPA agrees with these assessments but would add that the NE Sector's workload moderated significantly after 0850:57 and remained such until after the CPA, yet the 3 supervisory personnel had not noticed the developing situation between the Typhoon and Tucano and NE Tac did not provide TI. This may also suggest a HF basis for the error, related to the workload incurred by the NE Sector team throughout the controlling period and the high-to-low workload transition associated with the change in task-load from 0850:57 with a consequent reduction in arousal level.

This Airprox occurred as a result of a conflict of flight paths within Class G airspace but was contributed to by a lack of TI from LATCC(Mil) NE Tac to the Typhoon Formation.

BM SPA agrees with the recommendations made by the unit's investigation, specifically those related to the awareness, assessment and management of task-load and task complexity in controllers by supervisory personnel. BM SPA are undertaking research to determine the HF related to the monitoring of and interventions with trainee controllers by supervisory personnel and expect to release initial findings in late 2013.

**HQ AIR (OPS)** comments that the Typhoon squadron have used this incident to refresh debate about the selection of airspace for dynamic sorties. Where there is an option, areas with lower traffic densities should be prioritised. Whilst the statement by the Typhoon pilot that he was under a BS may just be a typo, it is timely to note that recommendations to strengthen aircrew understanding of ATSOCAS have been made to CFS. The effectiveness of the Tucano pilot's use of TCAS is noted and should strengthen the case for wider employment of such technology.

## **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.

Board Members agreed that the Typhoon and Tucano pilots were operating in class G airspace where they all shared an equal responsibility to 'see and avoid'. In this instance, as the Typhoon approached from the Tucano's R side, the Typhoon pilot had right of way. Members also agreed that this Airprox raised several points that were worthy of consideration; first, the question of whether the Vale of York AIAA was an appropriate place to conduct a 2v2 ACM mission. As with many real-world situations, Members opined that the answer was 'it depends'. The level of traffic was an obvious consideration but other aspects included the agreed ATS, the associated amount of ATC RT, its impact on the inter-formation RT and associated safety implications and the requested altitude operating block. This latter aspect was discussed at length and Members agreed that it was sensible to obtain a TS in such busy airspace. Consequently it is important to request the smallest altitude block possible, commensurate with the mission aims, such that effective TI can be provided. Mil ATCO Members advised that the Typhoon's performance presented new challenges in the provision of an ATS in that it's large rates of climb and descent resulted in large altitude changes within one ATC radar sweep, thus presenting a rapidly changing radar picture. This effect was compounded by the suppression of Mode C display on search radar displays at rates of climb or descent greater than 10000ft/min, a comparatively normal rate, by Typhoon standards. This in turn presented the ATCO with the problem of maintaining meaningful TI. Members were advised that in a congested volume of airspace, such as the Vale of York AIAA, it would not be possible to provide a TS over the full altitude block of 5000ft to FL350, and problematic over the altitude block 5000ft to FL240, with the Typhoon's potentially very high rates of climb and descent. Controllers had the dilemma of, on the one hand, providing TI on every contact approaching the column of airspace within which the Typhoons were operating, with potentially intrusive amounts of RT, or, on the other hand, trying to judge which contacts to call based on the altitude to the Typhoons at any particular time. In this Airprox it seemed that the trainee controller saw a high/low split between the Typhoon and Tucano and did not perceive a requirement to pass TI; his mentor, apparently distracted by an operational conversation with other supervisors, did not step in. The Typhoons manoeuvred such that Mode C was suppressed and it was then too late to pass TI once their Mode C readout was re-established and the conflict with the Tucano could be perceived. In summary, whilst overland ACM is recognised as a requirement, it was felt that factors such as the location, ATS and altitude block be carefully considered in the planning stage and, if needs be, that items such as required ATS be made a go/no go criterion for commencement and continuance of the mission, particularly in areas of non-segregated airspace.

Notwithstanding the difficulties of providing a TS in the Vale of York AIAA discussed above, it was clear that the Typhoon pilot did not gain any SA on the Tucano from TI and Members agreed,

therefore, that the ATC safety barriers had not been effective. However, the aircrew barriers of 'see and avoid' had been effective. The Tucano pilot also had SA from her TCAS, manoeuvred away from the traffic using that information and saw the Typhoons in time to be in a position where she could take effective action, albeit with a low energy level. In the event, the Typhoon pilot also saw the Tucano in time to take effective action and his ac's performance level allowed him to remove any risk of collision and maintain normal margins of safety.

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

Cause: A conflict in the Vale of York AIAA.

Degree of Risk: C.

ERC Score: 2.