

AIRPROX REPORT No 2014040

Date/Time: 14 Apr 2014 1004Z

Position: 5308N 00013W
(3.5nm NW RAF Coningsby)

Airspace: Lon FIR (Class: G)

Aircraft 1 Aircraft 2

Type: Typhoon T3 ASW20

Operator: HQ Air (Ops) Civ Pte

Alt/FL: FL30 ~3200ft
NK

Conditions: VMC VMC

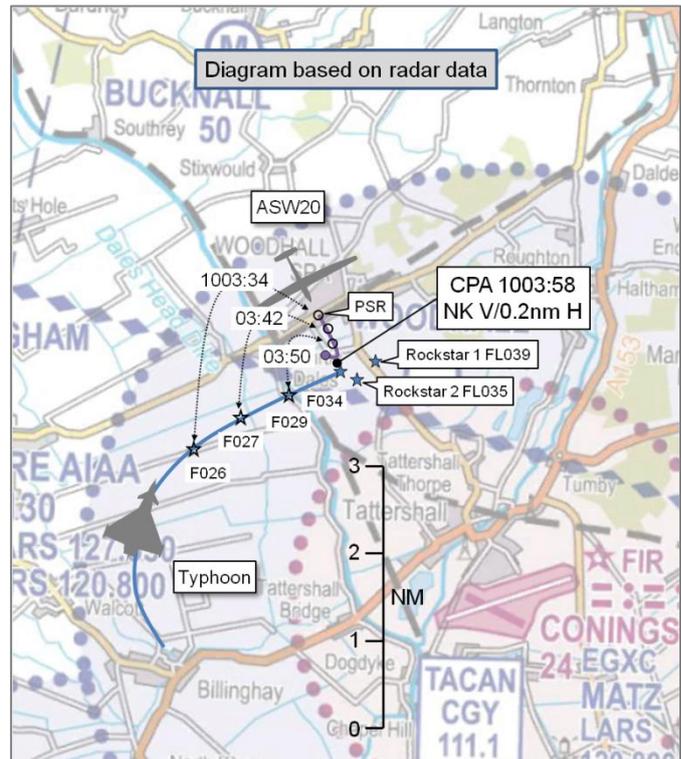
Visibility: 60km NK

Reported Separation:

0ft V/0.5nm H NK

Recorded Separation:

NK V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TYPHOON PILOT reports being the third aircraft of a 3-aircraft formation, callsign Rockstar, conducting a stream takeoff¹. The grey camouflaged aircraft had navigation lights and HISLs selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with a TAS or ACAS. The pilot was operating under VFR, in VMC, 2000ft below cloudbase, and was in receipt of a Traffic Service from Coningsby (CGY) Departures (DEP). The formation elements were following a SID and closing up into arrow formation². On roll out from the right-hand turn, heading 070° at 350kt, the pilot noticed a glider pass down his left-hand side at a range of about 0.5nm, co-altitude at FL30 and too late to take avoiding action. The formation had been given Traffic Information of 'traffic northwest, 7nm, no height, tracking north' before getting airborne. A climb out restriction of FL40 was in force, which the formation elements thought would keep them clear of the traffic although it is now unclear to whom that Traffic Information related. The pilot noted that the direction of the SID placed the formation elements belly-up to the glider during their turn.

He perceived the severity of the incident as 'Medium'.

THE ASW20 PILOT reports flying a task that took him overhead RAF Coningsby. The predominantly white glider was not fitted with external lighting or an SSR transponder. The aircraft was fitted with FLARM³. The pilot checked NOTAMs before flight and noted that Coningsby had an increased height limit valid for portions of the day. He telephoned Waddington to advise of glider flying from his home airfield and established that the CGY NOTAM was not applicable to his time of flight. After take-off he was getting much interference from the radio, which had been tested satisfactorily on the ground, so he selected it off. As he approached CGY, he turned the radio on and attempted to establish RT contact but heard nothing but interference. As he was crossing the MATZ, heading 170° at 65kt and at about 3200ft, he saw 3 Typhoons in the 4 o'clock position, heading towards him. He made a hard right hand turn through 180° and heard them pass behind him. He stated that he believed the situation could have been avoided if he had been able to make a radio call.

He did not make an assessment of the severity of risk.

¹ The aircraft line-up on the runway as a formation but roll and get airborne individually, typically at intervals of 5-10sec.

² Number 2 on the right, number 3 on the left, swept back by about 60° at a range of 100-300ft.

³ Flight Alarm (FLARM) is a Traffic Advisory System (TAS), warning of the proximity of other FLARM equipped aircraft.

THE DEP CONTROLLER reports being advised by the SUP that, prior to the departure of Rockstar formation, he had released 2 other formations in turn, initially on a SID 1 instead of a SID 2, to avoid aircraft conducting general handling north and northwest of CGY (by approximately 9nm and 13nm), which were working CGY ZONE. He identified the first formation, called the general handling traffic, and verified the formation Mode C returns. Once the formation was above the 'general handlers' he re-routed them back to a SID 2. A contact then appeared in the Bardney area and he called it to the first formation; however, it was no factor as their heading would keep them clear. The second formation called airborne, he identified them, verified their Mode C and, once they were above the general handling traffic, re-routed them back to a SID 2. Before re-routing the second formation, the Local Controller called for release on Rockstar formation on a SID 1. The DEP told the Local Controller to call the 'non-squawker', which had tracked southeast from Bardney towards the overhead (CGY bearing 350°, range 8nm). The Local Controller called the traffic and Rockstar formation was released. The first 2 formations were handed over to Swanwick Military by the SUP as Rockstar formation called airborne. The DEP identified Rockstar formation; he then verified their Mode Cs. Both Rockstar 1 and Rockstar 2 verified their level; however, there was no response from Rockstar 3. He asked Rockstar 3 again but there was still no reply. The Rockstar 3 pilot then reported that he had had a near miss with a glider. The DEP told him there was nothing seen on radar and informed the SUP of the occurrence. The DEP then handed Rockstar formation over to Swanwick. A few minutes later a non-squawker popped up approximately 3-4nm south of CGY. The DEP stated that he believed the non-squawker 'disappeared' in the CGY overhead.

THE CONINGSBY SUPERVISOR (SUP) reports being positioned in the ACR with the DEP/LARS and APR control positions manned. The DEP/LARS was working 2 Tutor aircraft, general handling to the north of CGY. The SUP was aware, through monitoring the VCR frequencies, that there were 3 Typhoon formations taxiing to depart. With the traffic level for the DEP expected to increase, SUP asked APR to take the VHF frequency and control of the Tutors. As control of the Tutors was being handed over, SUP asked DEP to request the pilot of the westerly Tutor manoeuvre no further south than his present position to allow the Typhoon formations to depart CGY. The first 2 formations had requested a SID 2 but, with a Tutor aircraft on their track, rather than stop the departing Typhoon's climb, SUP released the formations on a SID 1, to turn south and east of both Tutors before being offered a more northerly heading. The liaison between the ACR controllers and between the ACR and VCR controllers increased. After taking control of the Tutors, the pilot of the westerly Tutor asked to recover to Cranwell and turned on to a south-westerly heading. APR was focused on keeping the Tutor at FL50 on a south-westerly heading, 5nm away from the CGY overhead to allow for the departures. APR was assessing whether a climb-out restriction of FL40 would be needed against the Cranwell recovery and passed Traffic Information to both the ADC and DEP. The SUP brought a primary contact to the attention of the radar controllers, that had appeared just south of the recovering Tutor, heading towards the overhead. The third formation, Rockstar, a flight of 3 Typhoon's, had been released on a SID 1 and APR contacted ADC to apply a climb-out restriction against the Cranwell recovery. DEP had asked the ADC to call the primary contact to the departing Typhoons. As Rockstar established on the SID 1, the pilot of Rockstar 3 informed DEP that he had had a near miss with a glider on climb-out.

Factual Background

The weather at Coningsby was recorded as follows:

METAR EGXC 140950Z 32015KT 9999 SCT038 12/02 Q1023 BLU NOSIG
METAR EGXC 141050Z 34013KT 9999 SCT048 12/00 Q1024 BLU NOSIG

A transcript of the CGY DEP frequency was produced, as follows:

From	To	Speech Transcription	Time
DEP	ADC	Departures	0958:33
ADC	DEP	Tower request release in turn Rockstar two one flight	0958:34
Rockstar 11	ADC	Coningsby tower good morning Rockstar one one flight holding at alpha one.	0958:39
DEP	ADC	Er Rockstar two one flight	0958:40
ADC	DEP	Apologies Rockstar one one flight	0958:43
DEP	ADC	Rockstar one one flight	0958:46
ADC	Rockstar 11	Rockstar one one flight Coningsby tower apologies say again	0958:46
Rockstar 11	ADC	Rockstar one one flight holding alpha one.	0958:50
DEP	ADC	If you call the traffic north west coningsby by eight miles er non-squawker	0958:51
ADC	DEP	Hang on two seconds mate say again position.	0958:54
DEP	ADC	Coningsby three five zero eight miles	0958:57
ADC	DEP	Small contact just south of the one at five five	0958:59
DEP	ADC	Yeah	0959:02
ADC	DEP	Contact	0959:03
DEP	ADC	If you call that released	0959:04
ADC	DEP	Call released will do	0959:05
Razor 12	ADC	Razor one two airborne stud three	0959:05
ADC	Rockstar 11	Rockstar one one flight line up and wait wind two zero zero one one	0959:10
Rockstar 11	ADC	Rockstar one one will call ready for departure	0959:14
ADC	Rockstar 11	Rockstar one one flight roger	0959:18
Rockstar 11	ADC	Rockstar	0959:20
Rockstar 11	ADC	Rockstar one one flight ready for departure	0959:29
ADC	Rockstar 11	Rockstar one one flight Coningsby has traffic north west range seven miles tracking northbound slow moving no height information	0959:33
Rockstar 11	ADC	Rockstar one one copied	0959:40
ADC	Rockstar 11	Rockstar one one flight cleared for take-off wind three two zero one zero	0959:42
Rockstar 11	ADC	Cleared take off Rockstar one one flight	0959:46
ADC	APR	Tower	1000:21
APR	ADC	Who have you got climbing out at the moment [name]	1000:22
ADC	APR	It will be Rockstar one one flight	1000:23
APR	ADC	Are they actually rolling yet	1000:25
ADC	APR	Yep the first one is just putting his power on now	1000:26
APR	ADC	If you could catch them climb out restriction not above four zero if not traffic information Coningsby north west six miles south west bound one seven seven five	1000:29
ADC	APR	Contact	1000:36
APR	ADC	That's at five zero if you can get the four zero stop that would be much appreciated	1000:37
ADC	APR	Roger I'll try my best	1000:39
APR	ADC	Thank you very much	1000:40

From	To	Speech Transcription	Time
ADC	Rockstar 11	Rockstar one one flight on departure climb not above flight level five zero	1002:20
Rockstar 11	ADC	Not above five zero for Rockstar one one flight	1002:23
ADC	Rockstar 11	Rockstar one one flight apologies not above flight level four zero	1002:27
Rockstar 11	ADC	Not above four zero Rockstar one one flight	1002:29
Rockstar 13	ADC	Rockstar three airborne push three	1002:33
Rockstar 11	DEP	Coningsby departures Rockstar one one flight airborne climbing four zero traffic service	1002:36
DEP	Rockstar 11	Rockstar one one flight Coningsby departures identified climbing flight level four zero traffic service traffic north west two miles tracking south flight level five zero	1002:44
Rockstar 11	DEP	Rockstar one one	1002:53
DEP	Razor 11	Razor one one flight instructions from London climb flight level two four zero	1002:55
Razor 11	DEP	Flight level two four zero Razor one one	1002:59
DEP	Razor 11	Razor one one flight contact Swanwick Mil stud fourteen	1003:01
Razor 11	DEP	Stud fourteen Razor one one flight push	1003:05
DEP	Rockstar 11	Rockstar one one flight clear of traffic climb flight level one five zero	1003:12
Rockstar 11	DEP	Climb flight level one five zero wilko Rockstar one one flight	1003:18
DEP	Rockstar 11	Rockstar one one flight apologies climb into the block flight level one four zero to flight level one five zero Rockstar one one request level passing	1003:23
Rockstar 11	DEP	Currently level flight level three zero Rockstar one one	1003:28
DEP	Rockstar 12	Rockstar one two request level passing	1003:32
Rockstar 12	DEP	Rockstar one two passing flight level three zero	1003:35
DEP	Rockstar 13	Rockstar one three request level passing	1003:39
DEP	Rockstar 13	Rockstar one three request level passing	1003:56
DEP	Rockstar 11	Rockstar one one flight squawk six zero five zero Rockstar one two and one three squawk standby	1004:19
Rockstar 11	DEP	Six zero five zero and standby for two and three for rockstar one one flight	1004:27
DEP	Rockstar 11	Rockstar one one flight traffic left eleven o'clock five miles crossing left right at flight level six two descending	1004:34
Rockstar 11	DEP	Rockstar one one copied	1004:40
Swanwick mil NE	DEP	Swanwick north east planner	1004:55
DEP	Swanwick mil NE	Coningsby departures handover Rockstar one one flight standby	1004:57
Rockstar 13	DEP	Departures Rockstar one three	1004:57
DEP	Rockstar 13	Rockstar one three pass message	1005:00
Rockstar 13	DEP	Rockstar one three just had an air miss with a glider approx minute zero four just on the SID then	1005:02
DEP	Rockstar 13	Rockstar one one flight roger there's nothing shown on our radar	1005:09
Rockstar 13	DEP	Copy that, last seen heading off to the West.	1005:13
DEP	Rockstar 13	Rockstar one three roger	1005:17

Analysis and Investigation

Military ATM

This incident occurred between a Typhoon, who's pilot was under a Traffic Service with CGY DEP, and a glider, who's pilot that was not in receipt of an ATS.

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated. The Claxby Radar was used for the radar analysis and it was not representative of the picture that was available to the CGY controllers.

The DEP described the workload and task complexity as 'medium' with seven aircraft on frequency. Two formations of Typhoons had been provided with different Standard Instrument Departures (SIDs) to deconflict with 2 aircraft conducting general handling to the north and northwest. The ADC called DEP to request a release on Rockstar formation. DEP identified an aircraft to the ADC, via Hi-Brite radar, and released the departure on the condition of Traffic Information being passed. The traffic was a non-squawker tracking towards the CGY overhead. The SUP was handing over the previous departures to Swanwick(Mil) whilst DEP was preparing for Rockstar to report on frequency. Rockstar were identified, provided a Traffic Service and requested level passing to verify the Mode C. Rockstar 13 did not reply initially and finally did so to report an Airprox with a glider; the DEP controller could not see any conflicting aircraft on radar. A few minutes later, a non-squawker appeared south of CGY and tracing action began. The SUP witnessed the incident and agreed with the controller's assessment of workload.

With three formations taxiing for departure, the SUP began to make provision for safe departures by directing DEP to hand aircraft over to APR, agreeing operating areas with Tutors that were general handling to the northwest, and amending allocated SIDs to keep departing aircraft clear of traffic. Furthermore, the SUP had been negotiating a climb-out restriction for the Typhoons and had spotted the non-squawker heading to the overhead. The SUP recalled the DEP, releasing Rockstar subject to the Traffic Information and the Airprox being called on RT. The non-squawking aircraft was tracked through surrounding radar units and a Tutor was used to gather the glider's registration.

At 0958:34, the ADC requested release on Rockstar. The DEP pointed out, "*traffic north west coningsby by 8 miles er non-squawker*", see Figure 1 below. Amplification was given at 0958:57 as, "*Coningsby three five zero eight miles.*" The ADC confirmed that it was a contact to the south of the squawking aircraft.

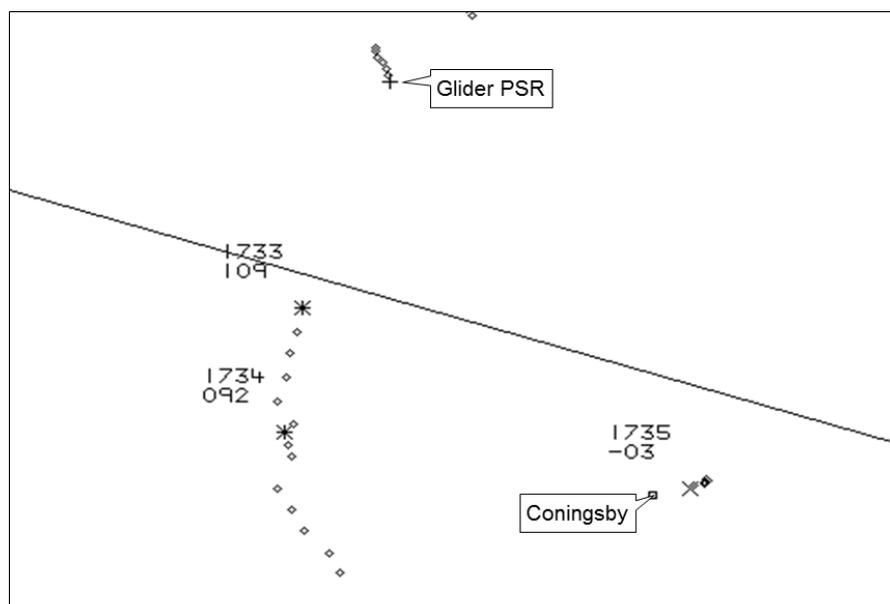


Figure 1: Non-squawking aircraft believed to be the glider at 0958:34

At 0959:33, the ADC transmitted, “Rockstar one one flight Coningsby has traffic north west range seven miles tracking northbound slow moving no height information”, see Figure 2 below. Rockstar acknowledged the traffic and were given clearance for take-off.

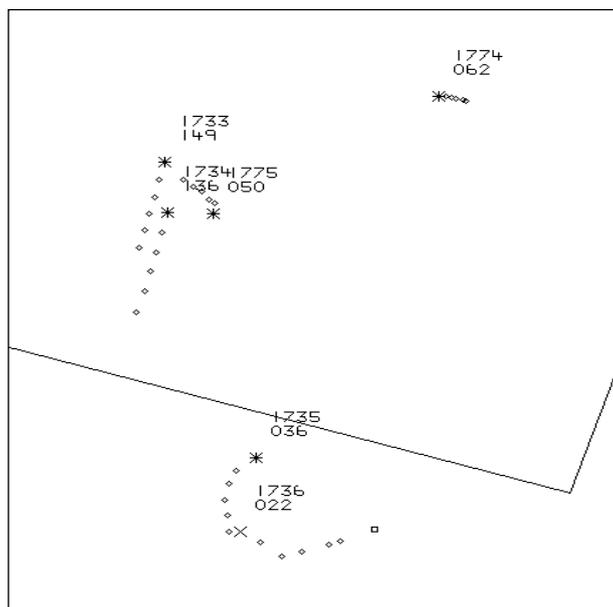


Figure 2: Non-squawking aircraft has faded as Traffic Information passed to Rockstar

The APR directed a climb-out restriction of FL40 against the 1775 squawk and this was passed to Rockstar at 1002:27. At 1002:44, DEP transmitted, “Rockstar one one flight Coningsby departures identified climbing flight level four zero traffic service traffic north west two miles tracking south flight level five zero”, see Figure 3 below.

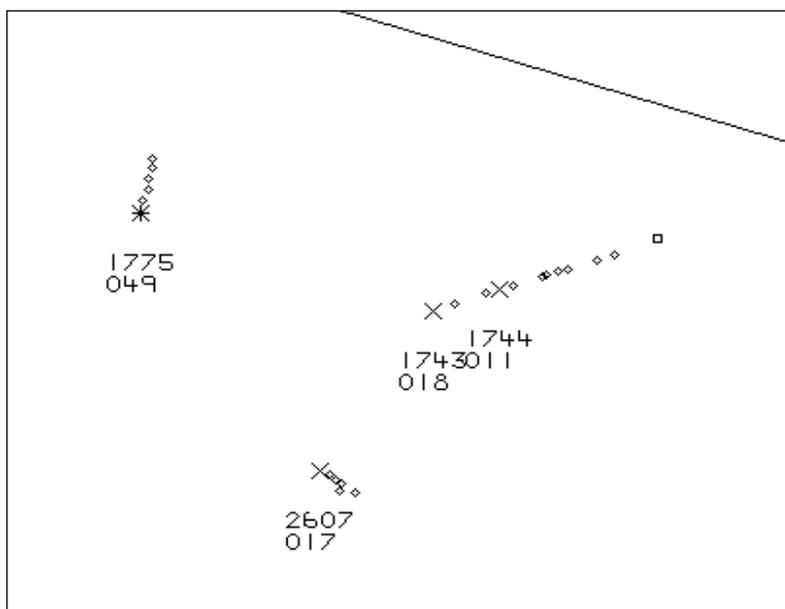


Figure 3: Rockstar 11 and 12 squawking 1743 and 1744, non-squawker still not on radar.

At 1003:12, DEP updated with, “Rockstar one one flight clear of traffic climb flight level one five zero”. Figure 4 illustrates the geometry at 1003:42 when Rockstar formation were clear of coordinated traffic and each aircraft was squawking.

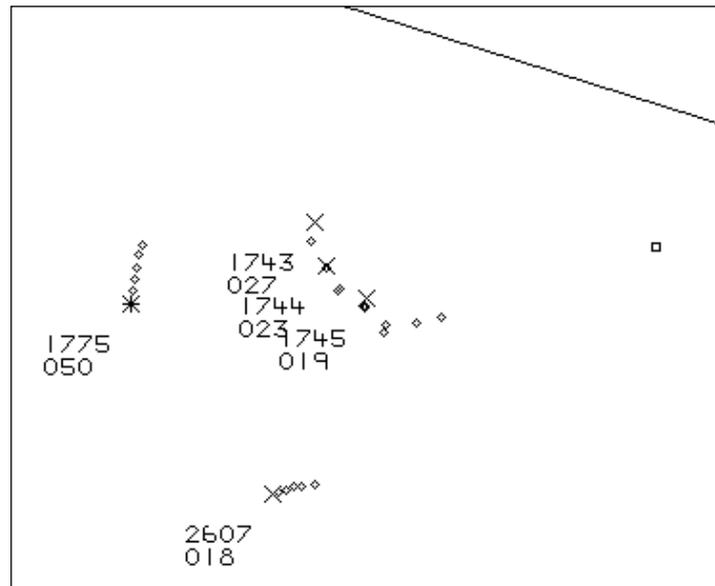


Figure 4: Aircraft geometry at 1003:12.

At 1003:39 and 1003:56, DEP attempted to call Rockstar 13 to request level passing and, with no reply, a Traffic Update was passed at 1004:34, “*Rockstar one one flight traffic left eleven o’clock five miles crossing left right at flight level six two descending.*” The CPA for the flight was estimated at 1003:56 from the Claxby replay, when an intermittent, non-squawking, slow moving aircraft suddenly appeared and took a right hand turn to pass to the left of the three Typhoons, see Figure 5 below.

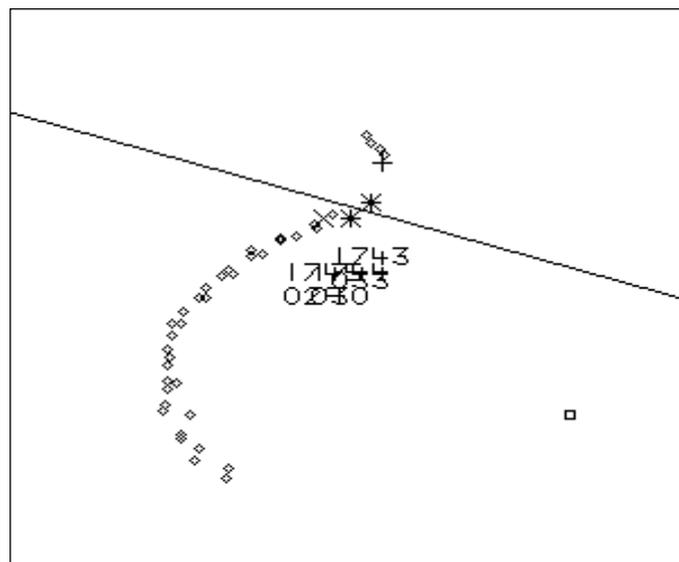


Figure 5: Aircraft geometry at 1003:50.

About 1min after CPA. at 1005:02, Rockstar 13 transmitted, “*Rockstar one three just had an air miss with a glider approx minute zero four just on the SID then.*”

The control team, led by the SUP, were pro-active in calling Traffic Information and placing restrictions on climb-outs. At the time of the original Traffic Information to Rockstar (when on the ground), the glider was 8nm from CGY and the glider profile corresponds with the information from DEP. Subsequently, a climb-out restriction was placed on Rockstar at FL40 against a Tutor at FL50; Traffic Information was called on the Tutor but it was not the source of the original information because the Tutor was squawking. 30sec after receiving the Traffic Information from DEP, the ADC relayed the information as, ‘7nm, tracking north, slow moving, with no height information’. The original information from DEP did not mention the direction of travel but it appears that the glider maintained a south-easterly track towards the CGY overhead; as the glider

was intermittent and disappeared on the CGY and Claxby radars, it would probably also have fallen off the Hi-Brite readout available to the ADC. The CPA occurred 3.4nm to the northwest of CGY and, although the glider was lost in the overhead when tracing action began, the Primary Radar would be expected to detect a glider at 3200ft (the reported altitude) between 8nm and 3nm. It is not known if the glider descended or the radar performance was suspect. For the control team, a non-squawking, non-transmitting glider was cloaked to them in an area in constant use for instrument departures.

A local investigation commented that Rockstar 13 was a twin-seat Typhoon with two experienced crew, and that the workload at the time of the Airprox would have been well within their capabilities. The focus on formation joining and the fact that the fast jets were 'belly up' to the glider, adds context to the late sighting because the attitude of the jets was a natural limitation to lookout. CGY commented that a white glider is not visible to the naked eye generally until within 5nm and, at 350kt, this results in reduced time for visual acquisition; before going 'belly up' the crew would have scanned the airspace that the turn was covering. The original Traffic Information from the ADC was on a slow moving, non-squawking aircraft and the next piece of information, from DEP, was on the coordinated Tutor. The crews may have considered the second piece of information linked to the first, particularly because no update was available on the glider.

Clearly, communication with CGY from the glider pilot would have aided situational awareness for all parties. It is not known at what range the pilot became visual with the fast-moving Typhoons but he had to take a hard avoiding action turn to keep clear.

Whilst Traffic Information was initially passed to the Typhoons, the intermittent contact on the glider meant that it was not a reliable barrier to an Airprox. Typhoon onboard sensors and the glider's FLARM do not appear to have provided a barrier. Pilot lookout was the barrier that prevented the aircraft getting closer to each other although this barrier would normally need reinforcing due to inherent limitations on visual acquisition at the speed differential of the Typhoons and glider. More robust notification procedures for GA aircraft routing close to a fast jet airfield, such as use of a transponder, would have provided better awareness to crews and ATC.

UKAB Secretariat

Both pilots had an equal responsibility for collision avoidance and not to fly into such proximity as to create a danger of collision⁴. The Typhoon pilot was required to give way to the glider⁵.

Comments

HQ Air Command

The minutes leading up to this Airprox were relatively busy for the Coningsby ATC team, who had formulated plans to separate departing formations of Typhoons from those aircraft that were showing on the radar picture. Unfortunately, the glider was an intermittent, slow moving, non-squawking contact heading directly for the radar overhead (where primary radar detection is extremely limited, if not impossible). Whilst an initial attempt was made to pass information about the glider to the departing formation, it appears that the track direction given was erroneous which may have led the formation to disregard the information as there would be no perceived conflict (contact north-west tracking north), and the contact then faded. The glider pilot is to be praised for attempting to call Coningsby via radio to state his intentions, even though he was under no obligation to do so. However, routing through a known area of high density, fast moving military traffic without establishing radio contact with the local ATC agency is perhaps exposing oneself to increased risk of encountering that military traffic. That said, this incident highlights the fact that lookout, coupled with an appropriate radar service, remains a prime barrier to MAC; this is equally relevant to departure and recovery as to any other phase of flight.

⁴ Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions) and as reflected in Military Flying Regulations.

⁵ *ibid.*, Rule 9 (Converging).

Summary

An Airprox was reported when a Typhoon and an ASW20 glider flew into proximity near RAF Coningsby at 1005 on Monday 14th April 2014. Both pilots were operating in VMC under VFR in Class G airspace: the Typhoon pilot was in receipt of a Traffic Service; the glider pilot was not in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, 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.

The Board first considered the actions of the Coningsby ATC team. It was apparent that the controllers and Supervisor were proactively managing the departure profiles of the departing Typhoon formations with respect to known traffic operating to the north and northwest. It was unfortunate that the glider track presented as a contact moving to the north, presumably as a result of the glider being orbited in a thermal or of radar jitter; the resulting Traffic Information call to Rockstar might have been assimilated as 'non-factor' traffic by them and was clearly not considered a factor by the controller. The Board noted that the majority of gliders are not fitted with an SSR transponder and hence will present as a primary-only contact at best; with this in mind, members were concerned that Coningsby radar had not displayed returns from the glider and discussed measures to remedy that failing. It was noted that active electronic conspicuity came with a cost in terms of power, weight and price and members wondered whether passive conspicuity might offer a cheaper and lighter solution. A reference was made to yachting radar reflectors increasing their radar conspicuity and the Board resolved to recommend that, in light of evolving technology in this area, the BGA consider reviewing the feasibility of fitting radar reflectors in gliders. In the end, the Board were not able to establish why the Coningsby radar did not pick up the glider as it approached the airfield but members reiterated that the primary means of collision avoidance in Class G airspace is by 'see and avoid', not by Traffic Information, however helpful that may be.

Turning to the pilots concerned, the Board noted first that the crew of Rockstar 3 had seen the glider at about CPA, too late to take any avoiding action, and the pilots of Rockstar 1 and 2 had not seen the glider at all, having passed it at ranges of about 0.3nm and 0.5nm respectively. This reinforced the need for an effective lookout, with the mind-set that unknown, non-squawking, VFR traffic can be encountered anywhere outside the ATZ (and from Airprox incident statistics, with increased likelihood at 3000ft and lower altitudes). For his part, the Board commended the glider pilot for communicating by landline with Waddington ATC before flight, and for his attempts to establish RT contact with Coningsby once airborne, albeit without success; it was a matter of regret that his radio did not function correctly. Notwithstanding, Gliding members opined that, although the airspace he chose to transit through as part of his task was freely available to all, even with a serviceable radio he may have been better served by choosing a route that did not pass directly overhead Coningsby with its associated high-performance traffic. If the weather precluded choice of a task elsewhere, then members felt that it would also have been reasonable for him to have had a 'Plan B' of not flying in the vicinity of Coningsby if 2-way RT contact could not be established.

Finally, members noted the valuable work undertaken by Regional Airspace Users Working Groups and recommended them as an ideal forum in which VFR airspace users could exchange important information concerning the operation of their various aircraft. The Board opined that this Airprox would provide an excellent vehicle for highlighting risks and the need for pro-active coordination and defensive flying in the local area.

The Board decided that the cause of the Airprox was simply a conflict in Class G airspace which the glider pilot had resolved by seeing and turning away from the approaching formation. Given that the glider pilot reported hearing the Typhoon formation pass behind him after making his 'hard right turn', the Board concluded that safety margins had been much reduced below the norm.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G, resolved by the glider pilot.

Degree of Risk: B

ERC Score⁶: 20

Recommendation: The BGA considers reviewing the feasibility of fitting radar reflectors in gliders.

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.