

AIRPROX REPORT No 2014004

Date/Time: 15 Jan 2014 1150Z

Position: 5303N 00014W
(9nm ne RAF Cranwell)

Airspace: Cranwell/Coningsby

CMATZ (Class: G)

Aircraft 1 **Aircraft 2**

Type: Tutor F-15

Operator: HQ Air (Trg) Foreign Mil

Alt/FL: 1800 2000
QNH (988hPa) NK

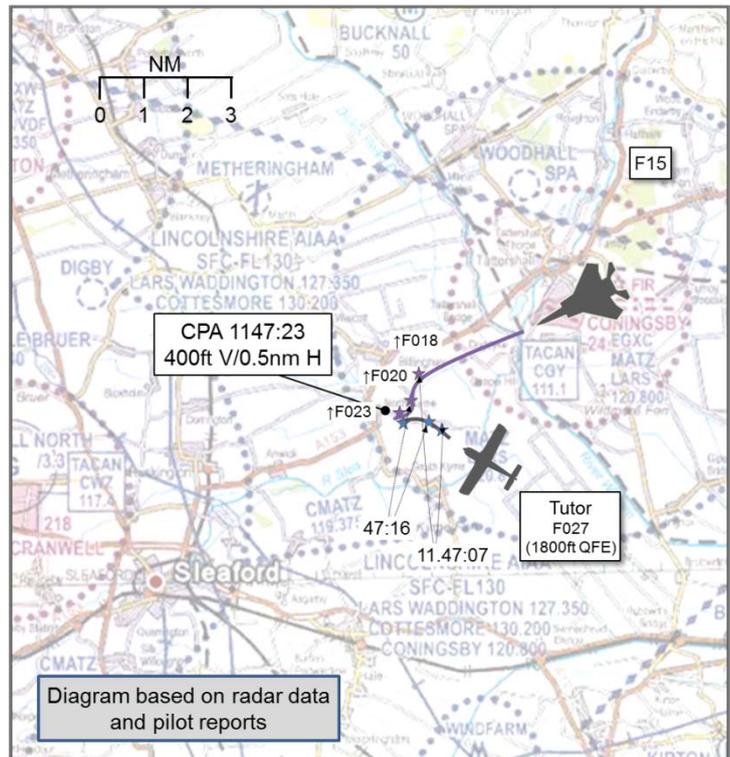
Conditions: VMC IMC

Visibility: 8km NK

Reported Separation:

0 V/200m H 500 V/>1nm H

Recorded Separation: 400ft V/0.5nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying a white aircraft with strobes on and squawking transponder Modes 3/A and C. He was flying in the Cranwell RTC¹ at 1800ft on the QFE 988hPa under a Traffic Service. As the Cranwell Director instructed him to contact the Talkdown Controller he received a proximity warning on TAS, he looked out and saw 2 F-15s cross from the 4 o'clock position to the 2 o'clock, about ¼ mile away, they were in a climbing right turn and passed through his level. He reported the incident to the Cranwell Director and then continued with the talkdown without further incident.

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

THE F-15 PILOT reports leading a pair of 2 dark-grey F-15s in close formation with SSR Modes 3A and C selected and "all beacons and lights" illuminated. Following a TACAN approach at Coningsby they climbed out as instructed; on initial contact with Coningsby Approach they received an avoiding-action right turn, which they complied with. They saw the Tutor approximately 1nm away 500ft above drifting rapidly away, assessed there was no risk of collision, and continued the climbing turn.

He assessed the risk of collision as 'Low'.

THE CRANWELL DIRECTOR CONTROLLER reports controlling the Tutor under a Traffic Service in the radar circuit when Coningsby ATC rang through for co-ordination. Coningsby identified their traffic as a pair of F-15s and, after some protracted discussion on the land-line, decided that because their traffic was joining the visual circuit co-ordination was no longer required. Cranwell Director turned the Tutor onto a final heading of 270° and at 9.5nm from touchdown told the pilot to contact the Talkdown Controller. After a short period of time the Tutor came back to the Director's frequency to inform him that a pair of F-15s departing the Coningsby circuit had just come very close. At that stage the conflicting traffic had merged, and the controller was unable to read the Mode C; he updated the Tutor pilot on the information he had, and once the Mode C came back onto the radar screen, updated the height until the conflict had passed. The Tutor then continued with his talkdown without further incident.

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

¹ Radar Training Circuit

THE CRANWELL SUPERVISOR reports that he had just opened the Director position to cater for an increase in traffic requesting radar recoveries. There were 4 aircraft in the radar pattern, 3 being controlled by the Director and 1 by the Approach controller. He heard the Coningsby controller ring through for co-ordination, and later took another landline call where Coningsby stated that the F-15s would be departing from the downwind leg of their visual circuit. He then concentrated on liaising between Director and Approach to ensure that both controllers were aware of the order of recovery. He was standing behind the Director looking at the radar screen and saw the F-15s overshoot and begin to turn left, which looked like they were joining the visual circuit, so he was content for the Tutor to transfer to the Talkdown controller because both aircraft were turning away from each other. However, after 3 radar sweeps it became apparent that the F-15s were departing Coningsby and would now be a confliction. Because the Tutor was thought to be between frequencies, neither controller was able to pass traffic information but the Supervisor briefed the Talkdown controller to pass traffic information on the F-15s as soon as the Tutor came on frequency. Subsequently, the Tutor called the Director and informed him of the close call he had just had with the F-15s.

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

THE CONINGSBY APPROACH reports that he was controlling the 2 F-15s under a Deconfliction Service which was limited due to Coningsby being SSR only. The F-15s were receiving vectors for the TACAN and had requested to join the visual circuit, the Coningsby weather was BLU so this was approved, and the F-15s were given the brief for Coningsby visual circuits; they were also given climb-out instructions for when they had completed their visual circuits. The Coningsby weather then changed to colour code GREEN but, with a 1200ft cloud base, visual circuits were still allowed. The Coningsby Controller called the Cranwell Director for co-ordination but, whilst in the middle of the co-ordination the Coningsby QFE changed, which meant they no longer had the separation required if the F-15s were to climb to 1500ft; furthermore, the radar vector chart meant that a restriction of 1200ft could only be maintained until 5nm from Coningsby. As a result, the Coningsby controller resolved to keep the F-15s clear of the Cranwell pattern. The F-15s were then handed over to the talkdown controller. The controller reports basing his coordination planning on the assumption that the F-15s would join the visual circuit after the TACAN and so he didn't pass a climb-out restriction to the Talkdown controller but instead told the ADC that the F-15s would need to depart downwind in order to keep clear of the Cranwell RTC. He also passed this information on to Cranwell ATC. When the F-15s didn't join the visual circuit and reported on his frequency following the initial climb-out instructions, the controller immediately realised that there was a confliction, he gave an avoiding-action right turn, together with a warning about terrain clearance, and gave traffic information on the Cranwell Tutor. The F-15 pilot reported visual and continued the climb to FL100.

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

THE CONINGSBY SUPERVISOR reports that unit traffic was light when the F-15s were handed over, therefore he allowed the Approach controller to vector them for a TACAN approach. As the QFE changed he was involved with assisting the Talkdown Controller convert it from hPa to inches and, at the same time, he was aware that the Approach controller was trying to get co-ordination with the Cranwell controller. He decided that with the deteriorating weather he would re-position himself in the Visual Control Room to help the ADC, and possibly offer low-level circuits if required. The F-15s maintained runway heading on overshoot without calling the ADC and returned to Approach, consequently the Supervisor didn't witness the event.

Factual Background

The weather at Coningsby was reported as:

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METAR EGXC 151050Z 18009KT 9999 FEW010 BKN045 BKN120 09/08 Q0996 BLU TEMPO SCT010 GRN
METAR EGXC 151140Z 18009KT 9999 SCT012 BKN045 09/08 Q0995 GRN TEMPO FEW012 BLU
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The weather at Cranwell was reported as:

METAR EGYD 151150Z 20015KT 9999 FEW009 SCT030 BKN130 09/08 Q0995 BLU TEMPO SCT009 GRN

Analysis and Investigation

Military ATM

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated. Figure 1 shows the RAF Cranwell and RAF Coningsby CMATZ.



Figure 1: The RAF Cranwell (CWL) and RAF Coningsby (CGY) CMATZ.

The Cranwell Dir reported the workload as ‘low’ and task difficulty as ‘low-to-medium’. He recalls Coningsby calling on the landline to co-ordinate, and Cranwell passed Traffic Information on two tracks in the RTC that would be not below 1800ft QFE 988hPa until 6nm finals. Figure 2 demonstrates the Cranwell SRA profile for RW26; the Tutor was being fed in from the south. No co-ordination was agreed after Coningsby requested to ‘disregard’; the Cranwell Dir continued to vector the Tutor from a base leg to a finals heading. The Coningsby controller rang back and the Cranwell Supervisor dealt with the call; Cranwell were advised that the F-15s would be requested to depart from the downwind leg of the Coningsby visual circuit to de-conflict with the Cranwell radar traffic. Cranwell did not deem Traffic Information necessary for the Tutor. Following an instruction to the Tutor to contact the Talkdown frequency, there was a delay prior to the Tutor reporting the F-15 sighting on Dir’s frequency.

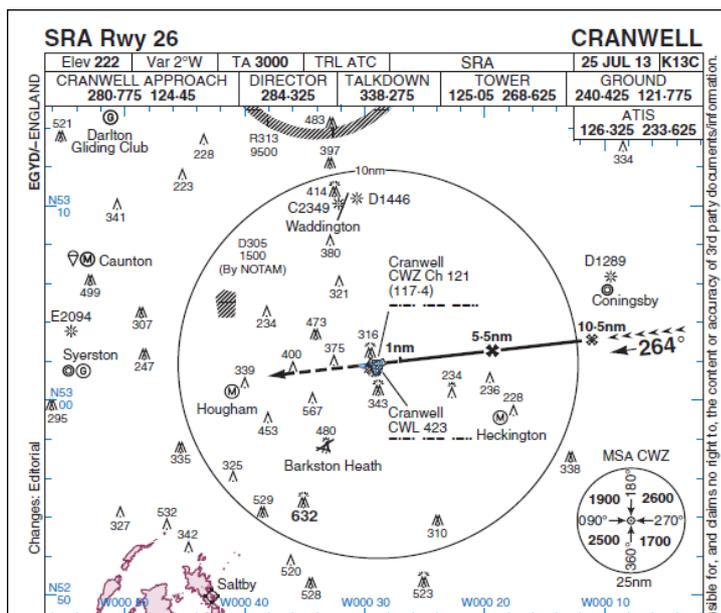


Figure 2: Cranwell SRA profile for RW26.

The Coningsby APP controller workload, as well as that of the unit as a whole, was classed as 'low' but APP did comment that the task difficulty was higher due to the reactive nature of the controlling. The F-15s were on a TACAN approach prior to joining the visual circuit. APP briefed the F-15s on visual circuit operations and provided climb-out instructions. The APP controller recalls transferring the F-15s to the Talkdown controller at around 10nm prior to working on co-ordination with Cranwell. However, the colour code changed as the weather deteriorated with a cloud base of 1200ft. A change in QFE should have led the APP controller to place a climb-out restriction of 1200ft QFE, as part of SOPs (when the difference between Cranwell and Coningsby QFE is 7hPa, climbout restrictions are set to 1500ft and lowered to 1200ft when the difference is 6hPa). With the 1200ft section of the Radar Vector Chart ending at 5nm and Cranwell's activity, the APP controller felt that there was nowhere to go with the F-15s. The 1200ft portion of the Radar Vector Chart only lasted for 5nm and a climb to 1500ft would provide terrain clearance but would not provide the prescribed separation of 500ft with Cranwell traffic (Cranwell traffic was at 1800ft QFE 988 hPa; Coningsby traffic at 1500ft on QFE 995 hPa provided 510ft separation but the QFE changed to 994 hPa provided only 480ft separation). Acting on the belief that the F-15s would conduct their visual circuit, coordination was not agreed with Cranwell and a climbout restriction was not placed on the F-15s.

A review of the radar replay and tape transcripts shows that at 1135:15 Coningsby APP placed the F-15s under a Deconfliction Service. At 1135:15 the F-15s requested, "[F-15 callsign] copied, er we'd like to vector to the TACAN 25 final and to er stay with tower for one visual pattern for a climbout to Lakenheath if available." APP approved the request and advised that visual circuits were flown to the south, left hand pitch, at 1000ft QFE. At 1137:24 APP confirms the plan for a low approach for one visual circuit and the F-15 pilot agreed. At 1137:56 APP instructs, "[F-15 callsign] can you low approach from your visual circuit then maintain runway track climbing flight level one hundred, on passing 1200ft turn left heading 160 degrees [F-15 lead callsign] maintain 1753 [F-15 wingman callsign] squawk 1754."

The F-15 pilot read back, "[F-15 callsign] copies er one hundred until departure end onto 120 then left 160 and er we'll squawk 1753 [F-15 wingman callsign] will remain within er er [unintelligible] in fact." APP replied with, "[F-15 callsign] that's understood "[F-15 wingman callsign] er and on climbout flight level one hundred." APP spoke to the Aerodrome Controller to explain the approach and to warn that a climbout restriction would be passed closer to the time. At 1142:42 APP confirms, "[F-15 callsign] er roger, your frequency when you climb out from tower will be 282.72, this one." The F-15s are then transferred to Talkdown for the approach to be monitored.

Coningsby APP called Cranwell for co-ordination at 1144:17, as per Figure 3, and were told that Cranwell squawks 2601 and 2604 were both not below 1800ft Cranwell QFE 988 until 6nm finals. The change of Coningsby QFE prompted the Coningsby controller to abandon the co-ordination.

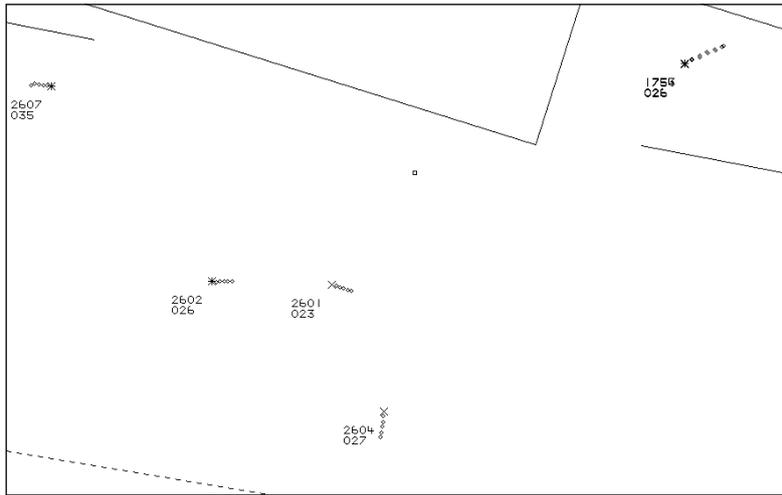


Figure 3: Aircraft geometry at 1144:17 (F15s squawk 1753/1754; Tutor 2604).

At 1145:26 Coningsby APP requested that the Aerodrome Controller keep the F-15s in the visual circuit for a second visual approach because of the QFE change and also requested that they depart from the downwind leg. At 1146:18 the Coningsby APP controller called the Cranwell Supervisor to inform them that they would try to get the F-15s to depart from the downwind leg of the visual circuit to keep out of the way of Cranwell traffic, as per Figure 4.

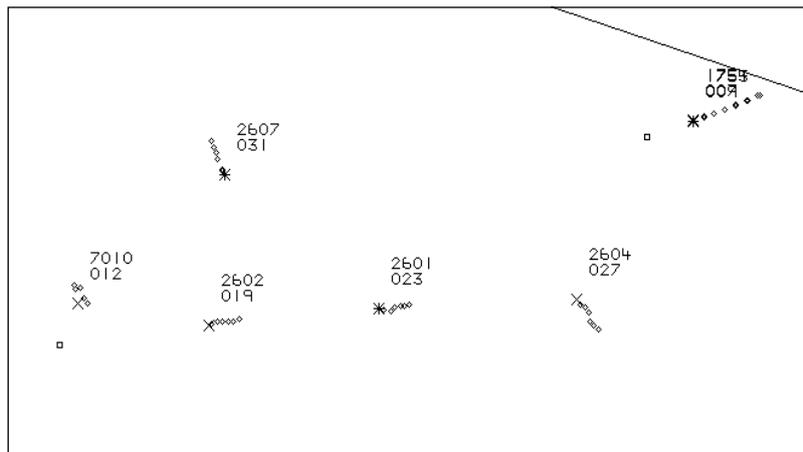


Figure 4: Aircraft geometry at 1146:18.

At 1146:48 the F-15s call APP, “Coningsby Approach [F-15 callsign] on the climbout unable to er to keep the pattern up with er...well lets get to climbout to 100.” As per Figure 5, at 1146:58 APP replies with “[F-15 callsign] er Coningsby Approach er roger, avoiding action, turn right immediately with terrain alert, traffic was er, south one mile tracking east inbound to Cranwell 700 feet below – above [controller correction] stop climb flight...1500 feet.” The F-15s reply with “[F-15 callsign] tally, no factor.”

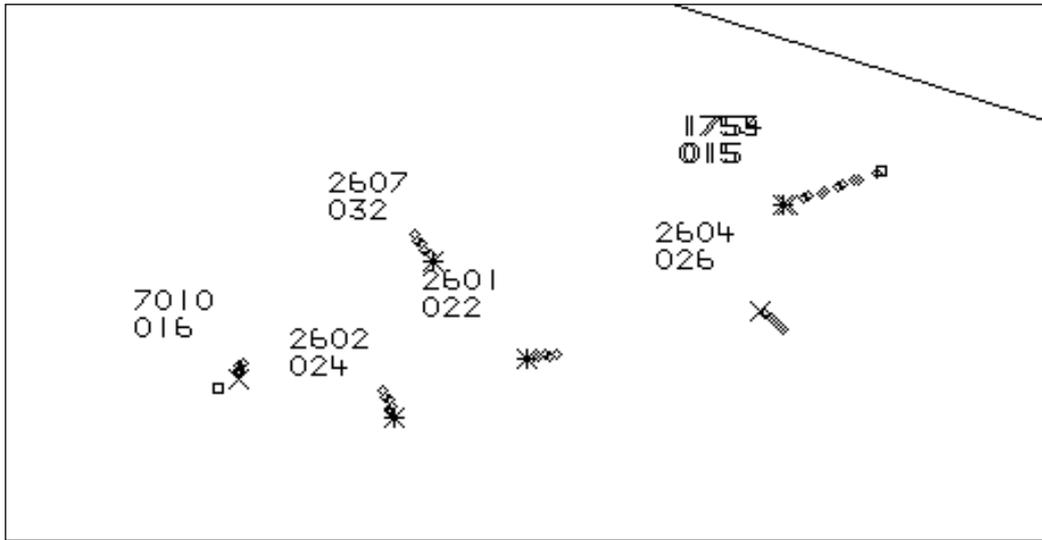


Figure 5: Aircraft geometry at 1146:58.

At 1147:16 the Tutor reports on the Cranwell Dir frequency, “[Tutor callsign] *Director two F-15s appeared half a mile, just in front of me.*” Dir replies with, [Tutor callsign] *that traffic is uh now slightly below, climbing, half a mile in front of you, not pre-noted by Coningsby.*”

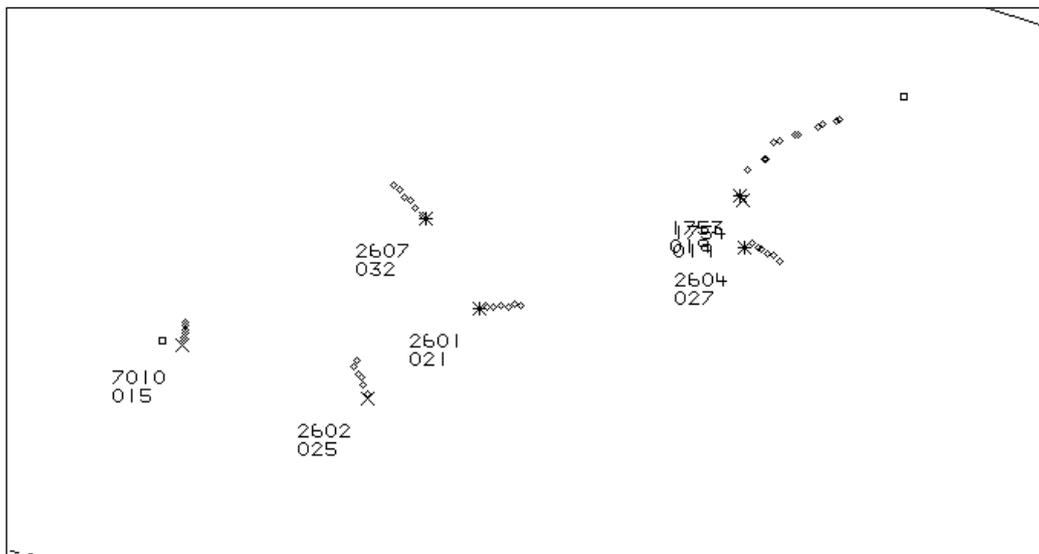


Figure 6 Aircraft geometry at 1147:11.

The Tutor pilot was under radar vectors for an IF approach and prioritised the use of TAS, over a frequency change, to get situational awareness on the fast moving traffic appearing from low level. The Cranwell controlling team were aware of the F-15 approach to Coningsby and were prepared to coordinate with Coningsby. No Traffic Information was passed to the Tutor but this is in the context of the information from Coningsby that the F-15s would be in the visual circuit and they were deemed not to be a factor; once the F-15s climbed out, the Tutor was believed to be in the process of calling the SRA controller and the Cranwell team were preparing to give information. The Tutor had remained on the Dir frequency and reported the incident.

It is not known when the F-15 crew were visual, or positionally aware from onboard sensors, with the Tutor, but they did report visual and no factor. The crew had chosen an appropriate type of service for the conditions. The F-15s did not join the visual circuit and followed the

profile of their pre-briefed climbout instruction. The crew communicated the change of plan with ATC as they climbed out from their low approach.

The Coningsby APP controller felt a lack of options and felt that they were reacting to events; a climbout restriction was not passed to the F-15s and the plan of deconfliction was based on the F-15s joining the visual circuit. The deteriorating weather may have meant visual circuits were questionable, and the pre-briefed climb-out instructions had effectively become the new Missed Approach Procedure (MAP) for the F-15s. Once the F-15s elected to climb-out and not join the visual circuit, the Coningsby APP controller had very little time to act and the aircraft labels had to be moved prior to avoiding action.

To the APP controller's credit, the pressure differences were calculated well during the QFE change and it was realised that providing terrain clearance for the F-15s did not provide the minimum of 500ft separation with the Tutor. Although the APP controller was not busy with volume of traffic, the situation posed problems because options were confined by the weather, the Radar Vector Chart, the Cranwell radar pattern and by a crew that were unfamiliar with local procedures. The APP controller had amended the MAP by providing bespoke climb-out details and in the event of a missed approach, the F-15s were cleared to climb to FL100. (The MAP in the charts at the time were incorrect as they stated a left turn onto 069° instead of a right hand turn, away from the Cranwell pattern). There was an assumption that the F-15s would get their visual circuit in, with a cloud-base at 1200ft and the circuit at 1000ft. By providing a bespoke climb-out clearance, the F-15s were likely to conflict with the Tutor if the visual circuit was unfit for flying. In addition, the details of the climb-out, as passed at 1137:46, gave a large amount of information and it is not clear from the read-back that all of the information was assimilated by the F-15 crew. The climb-out restriction was going to be put in place when the F-15s were in the visual circuit and the deconfliction plan centred upon the crews following the plan; however, the F-15 crew were not aware of this.

The APP controller was aware of the need to de-conflict and had been attempting various methods to do so. There may have been a perceptual error from the expectation of visual circuits because the plan was weather dependent and there were a lack of contingency plans available. However, the procedures in tight and busy airspace with unfamiliar crews, in poor weather, add context to the situation.

The barrier that worked during this incident was the lookout that allowed the F-15s to avoid the Tutor. The ATC Supervision monitored the situation well although the ATC deconfliction plan rested on favourable Met conditions and not a procedurally safe separation plan.

Following the incident, Coningsby instigated a review of the general procedures, including SIDs, to deconflict with the Cranwell and Waddington patterns. An increase in flying activity and tight overlapping patterns has led to the review. The Flight Information Publications are being updated to represent the correct MAP.

Comments

HQ Air Command

This Airprox ultimately came about because of the late notice change of intentions of the F-15 pilots due to the deteriorating weather in the Coningsby circuit. The Controllers at both Coningsby and Cranwell had identified the possible confliction and come up with a plan to keep the ac apart; however, the plan relied on the F-15s conducting at least one visual circuit at Coningsby. There also appears to be some uncertainty over what the F-15s understood to be their clearance – passing the post-circuit climb-out details prior to commencement of the descent on the TACAN

may have led the F-15 pilots to believe that the climb-out instructions would be valid with or without the inclusion of a visual circuit. Furthermore, the climb-out instructions could have included a requirement to depart from downwind (or runway reciprocal heading if not in the visual circuit) in order to maintain the lateral separation that the Coningsby APP controller had intended to introduce. Fortunately, once the F-15s commenced climb-out from the TACAN approach the ensuing conflict was immediately identified by the Coningsby APP controller who issued avoiding action to the F-15s.

USAFE

The F-15s, during and after their low approach, were IMC at visual circuit height and, having informed Coningsby APP, elected to depart in accordance with their climb-out instructions. They were, of course, unaware of any caveats that were or were not being considered to apply to the already briefed procedure.

Summary

An Airprox was reported on 15th January 2014 when a pair of F-15s under the control of Coningsby Approach climbed out of Coningsby and into conflict with a Tutor in the Cranwell Radar Circuit. The F-15s had just undertaken a TACAN approach to Coningsby and the Coningsby controller had expected them to join the visual circuit. The Tutor pilot was in the process of being handed over to the Cranwell Talkdown Controller when the F-15s flew 400ft and 0.5nm past him. The F-15 pilot was visual with the Tutor.

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.

The Board first discussed the actions of the F-15 pilots. On their approach to Coningsby they were not passed the MAP but were given a bespoke departure clearance which they subsequently read-back incorrectly. This read-back was not corrected by the controller. When they elected not to join the visual circuit after the radar approach due to the weather conditions and followed their climb-out instructions as they recalled them, this then put them in direct conflict with the Tutor in the Cranwell radar pattern. The Board discussed at some length whether the F15s should have executed the MAP rather than continue with the climb-out instructions as they had understood them, and decided that, because they hadn't been passed the MAP by APP, they couldn't have been expected to do anything differently.

The Board then turned to the actions of the controllers involved. They determined that the Cranwell Director could do very little about the incident. Working with the traffic information that he had, which was that the F-15s were departing from downwind in the Coningsby circuit, he couldn't have anticipated that they would subsequently change their departure plan. When he did see the Airprox unfolding it was unfortunate that the Tutor had just been instructed to change frequencies because this meant that traffic information was not passed. In fact, the Tutor pilot was alerted to the conflict by his TAS, and elected not to change frequency to enable him to look for, and see the traffic.

When discussing the actions of the Coningsby Approach controller, the Board felt that whilst acknowledging that he was operating in busy airspace, his lack of a robust plan for the conditions of the day was fundamental to the developing incident. It was noted that the published Coningsby MAP instructed aircraft to turn left after departure, which would have put the F-15s into conflict with the Cranwell radar circuit. The Board recognised that this meant that the Coningsby APP knew that he had to give different climb-out instructions, which, coupled with the height restrictions imposed by the radar vector chart, left him with few options. Notwithstanding, the Board opined that in assuming the F-15s would be able to conduct their visual circuit despite the worsening weather conditions, and by basing his plan on this without issuing clear instructions to the visiting aircraft, he allowed a situation

develop that rapidly became out of his control. The Board noted that the Coningsby Supervisor had decided to position himself in the visual control room to offer low-level circuits to the F-15s if the deteriorating weather required. The Board were split on the merit of this plan, with some maintaining that a visiting formation would have been highly unlikely to opt for a low-level circuit given the weather conditions of the time. All were in agreement that, although well-intentioned, the positioning of the Supervisor meant that in the ensuing situation he was powerless to help or intervene.

In determining the cause of the Airprox, the Board decided that the F15 pilots were given a departure profile which subsequently placed them into conflict with the Tutor. In assessing the risk, the Board noted that both pilots were visual with each other and that effective and timely actions had been taken to prevent the aircraft colliding.

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	The F15 pilots were given a departure profile which was insufficiently robust to prevent them flying into conflict with the Tutor.
<u>Degree of Risk:</u>	C
<u>ERC Score²:</u>	4

² 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.