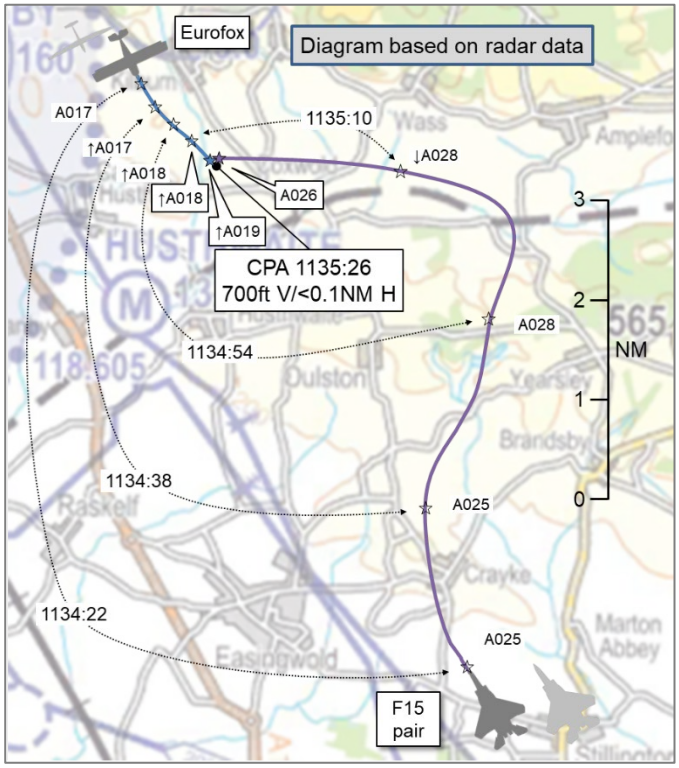
AIRPROX REPORT No 2022150

Date: 27 Jul 2022 Time: 1135Z Position: 5411N 00113W Location: 6NM E of Topcliffe

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Eurofox	F15
Operator	Civ FW	Foreign Mil
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Listening Out	Traffic
Provider	CGFF[1]	Leeming Approach
Altitude/FL	1900ft	2600ft
Transponder	A, C, S	A, C
Reported		
Colours	Yellow	Grey
Lighting	Landing, Strobes	Nav, Strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1300ft	2500ft
Altimeter	QFE (990hPa)	NK (NK hPa)
Heading	130°	NK
Speed	65kt	500kt
ACAS/TAS	FLARM	None[2]
Alert	None	None
Separation at CPA		
Reported	0ft V/250m H	Unknown
Recorded	700ft V/<0.1NM H	



THE EUROFOX PILOT reports that two F15s were sighted turning on to a westerly heading overhead Gilling, approximately 5NM east of Sutton Bank. The pair rolled out in fighting wing formation and closed rapidly from left-to-right but with relative movement astern of the tug/glider combination. Avoiding action was deemed unnecessary, and the F15 pair passed behind with horizontal separation from the tug of 300-400m (the glider on tow was 50m behind the tug). The F15s were flying with a small height split, and the formation passed astern the combination with zero height difference. The Airprox was reported to RAF Leeming and Leeming ATC also reported the incident which had been observed on radar. A NOTAM had been issued concerning the fast-jet activity around RAF Topcliffe, and the gliding operation at Sutton Bank (Yorkshire Gliding Club) was set up to launch to the southeast of the site in order to minimise flying in the NOTAM'd airspace.

The pilot assessed the risk of collision as 'High'.

THE F15 PILOT reports that they were operating in the vicinity of Leeming and Topcliffe with a NOTAM covering the surface to 18,000ft to enable close air support training. The flight lead was in communication with Swanwick Mil receiving a Traffic Service. The Joint Terminal Attack Controller (JTAC) requested a 'show of force', which is a low-level pass over the requested area. [The F15 pilots] coordinated with Swanwick and Leeming to descend to 2000ft for a show of force (despite already being given SFC to 18,000ft). [The F15 pair] did not have UK military low flying booked so did not plan to descend below 2000ft. They carried out additional coordination because they had situational awareness from local area experience and briefing that the MATZ is a popular low fly/glider spot. They additionally tried to communicate with Topcliffe Tower, but could not establish contact with them on their UHF or VHF frequencies. They asked Swanwick to relay to Topcliffe Tower, which they complied with. [The F15 pair] subsequently aborted at 2500ft AGL after experiencing heavy glider activity, no single aircraft

[1] CGFF, Common glider field frequency.
[2] Weapons system radar was being used for traffic awareness.

appeared to be close enough to cause concern to [the F15] crew but there were a high number of gliders in the area and the best course of action was to avoid the area completely.

The pilot assessed the risk of collision as 'Low'.

THE LEEMING APPROACH CONTROLLER reports that they were controlling two F15s who were conducting a close air support exercise at Topcliffe with a JTAC from Allanbrooke Barracks (Topcliffe). Due to them wanting to descend below Swanwick Mil radar coverage, and the need to enter the Leeming/Topcliffe CMATZ, they took the formation onto their frequency. High traffic density was seen in the vicinity of Sutton Bank glider site and numerous contacts were called and Traffic Information was reduced due to high traffic density. The F15 pair called visual with some of the radar contacts but no Airprox was called by either the F15s or any general aviation traffic in contact with RAF Leeming. Leeming ATC was notified several days later that an Airprox had been submitted by [Eurofox c/s] in the vicinity of Sutton Bank.

The controller perceived the severity of the incident as 'Low'.

THE LEEMING SUPERVISOR reports that they did not witness the event but state it is not the first time that fast jet aircraft have [not remained] clear of the Sutton Bank area when exercising in the vicinity of Topcliffe

Factual Background

The weather at Topcliffe was recorded as follows:

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METAR EGXZ 271150Z AUTO 17010KT 9999 FEW060/// 19/10 Q1020
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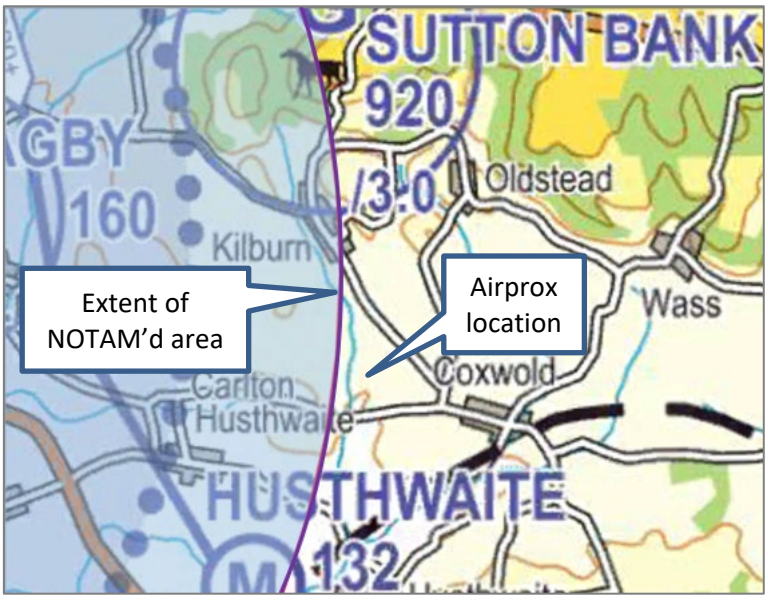
Relevant NOTAM

H5530/22: Exercises will take place
Q) EGTT/QWELW/IV/BO/AW/005/200/5412N00123W007
AIR EXER. MULTIPLE FAST JET ACFT AND HEL WILL CONDUCT HIGH
ENERGY MANOEUVRES WI 6NM RADIUS: 541221N 0012254W (TOPCLIFFE AD,
NORTH YORKSHIRE). ACFT MAY OPERATE AT SPEEDS OF UP TO 450 KNOTS
IAS AND MAY BE UNABLE TO COMPLY WITH RAC. AIC Y042/2020 REFERS.
OPS CTC 271.400MHZ / 07457 135280. 2022-07-0793/AS3.
LOWER: 500 Feet AMSL, UPPER: 20,000 Feet AMSL
FROM: 25 Jul 2022 07:30 GMT (07:30 UTC) TO: 29 Jul 2022 16:45 GMT (16:45
UTC)
SCHEDULE: 0730-1645



Analysis and Investigation

RAF Leeming Unit Investigation

Summary of Investigation

An investigation was carried out after an Airprox was filed by the pilot of a civilian aircraft involving 2 x F15s that were operating on the Leeming Radar frequency. The RT tapes were listened to (and transcribed) and a tape transcript was completed for the entire event.

Sequence of Events

Leeming Radar was controlling 2 x F15s which were conducting a close air support exercise at Topcliffe with joint terminal attack coordination from Allanbrooke Barracks (Topcliffe). Due to [the F15 pilots] wanting to descend below Swanwick Mil radar coverage, and the need to enter the Leeming/Topcliffe CMATZ, Leeming Radar took the formation onto their frequency. High traffic density was seen in the vicinity of Sutton Bank glider site and numerous contacts were called and Traffic Information was reduced due to high traffic density. The F15 pilots called visual with some of the radar contacts but no Airprox was called by either the F15 pilot or any general aviation traffic in contact with RAF Leeming. Leeming ATC was notified several days later that an Airprox had been submitted by [the Eurofox pilot] in the vicinity of Sutton Bank.

The outcome of this event was an Airprox submitted by [the Eurofox pilot] involving 2 x F15s. The Airprox was not notified on any Leeming frequency and was only reported to the unit a number of days later.

All traffic was called to the 2 x F15s on multiple occasions by the Leeming Radar controller. These calls continued up to 0.5NM away and the F15s were warned of a high traffic density in the area. They continued to fly their sortie as requested and [at the time, recall that they] experienced no Airprox of their own.

The 2 x F15 pilots were warned on multiple occasions of high traffic density within the vicinity of Sutton Bank and continued to fly low-level down to 2000ft AGL even though the Leeming Radar controller had warned them of this. The controller also reduced the Traffic Information for them due to the high traffic density.

Military ATM

An Airprox occurred on 27th July 2022 at approximately 1130, in the vicinity of Sutton Bank glider site, east of RAF Topcliffe. The F15 formation was in receipt of a Traffic Service from RAF Leeming Approach controller and the Eurofox was not in receipt of a service.

An air exercise was NOTAM'd to take place at RAF Topcliffe with multiple fast jet aircraft conducting high energy manoeuvres within a 6NM radius.

The Swanwick Mil controller had been providing a service to the F15 formation prior to handover to the Leeming Approach controller, which was before the Airprox had taken place. The F15 pilot requested at some point during the sortie to relay information, as they were unable to speak directly to Topcliffe Tower on UHF/VHF, however, due to the lack of direct line, this was not achieved by the Swanwick Mil controller.

The Leeming Supervisor did not witness the occurrence. The Leeming Approach controller was providing the F15 formation a Traffic Service. At 1130:53, shortly after handover, the Leeming Approach controller advised the F15 pilot of Sutton Bank gliding site activity, indicating multiple gliders airborne with no height information. At the request of the F15 pilot, the Leeming Approach controller provided the F15 formation a descent to 2000ft, as well as a reduction in Traffic Information due to high traffic density.

Figures 1-5 show the positions of the F15 formation and the Eurofox at relevant times during the Airprox. The screenshots are taken from a replay using the NATS radars, which are not utilised by the Leeming controllers, therefore may not be entirely representative of the picture available.

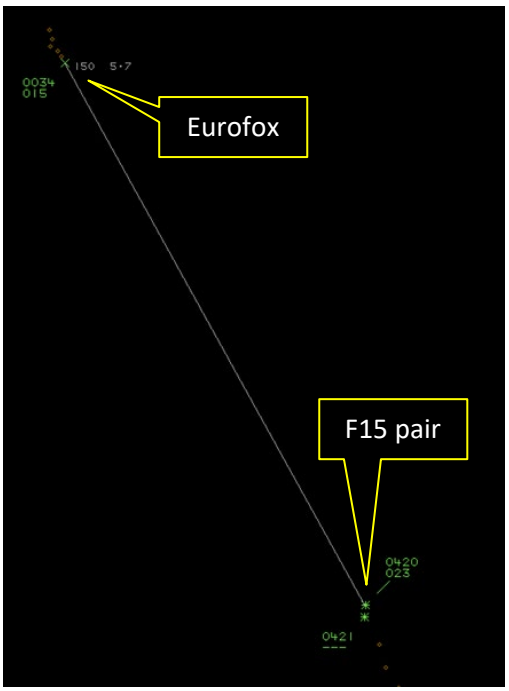


Figure 1: 1134:32 Traffic Information provided with F15s in the vicinity of the Eurofox.

The Leeming Approach controller called three contacts to the F15 pilots (who were squawking 0420 and 0421) in their 12 o'clock, 4NM. Only one contact can be seen in Figure 1, squawking 0034, the Eurofox aircraft. Separation was measured at 5.7NM and 800ft.

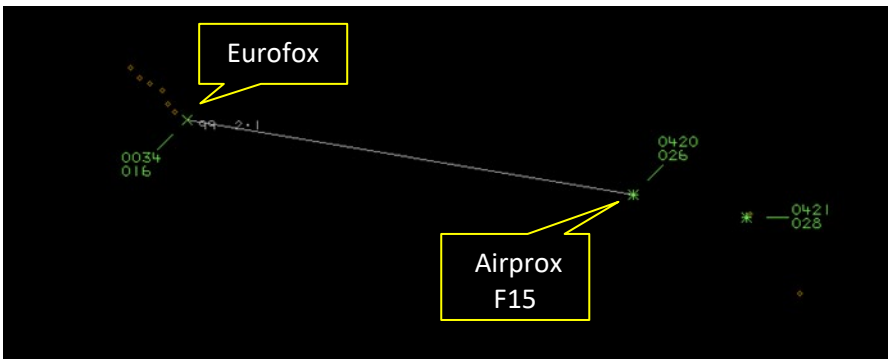


Figure 2. 1135:10 - Further Traffic Information with F15s provided in the vicinity of the Eurofox.

The Leeming Approach controller passed further Traffic Information to the F15 pilot, with three contacts, left, manoeuvring with no height information, range 1NM. Only the Eurofox can be seen in Figure 2, with separation between the lead F15 and Eurofox measured at 2.1NM and 1000ft.

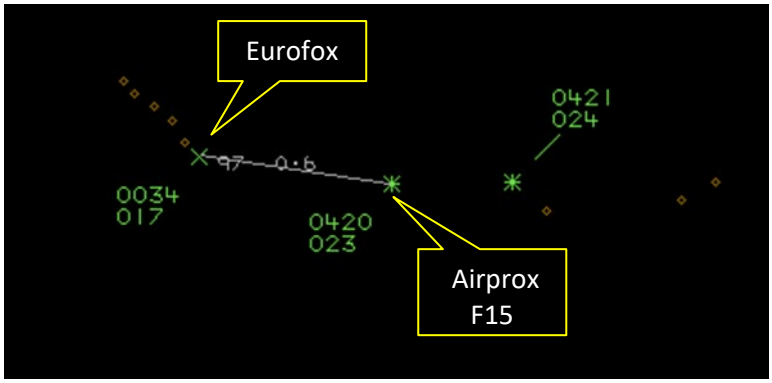


Figure 3. 1135:23 - Final radar sweep prior to CPA.

At 1135:23, no Traffic Information was passed [to the F15 pilot at this time]. Separation decreased to 0.6NM and 600ft Figure 3. It is not known if the Eurofox was displayed on the Leeming radar.

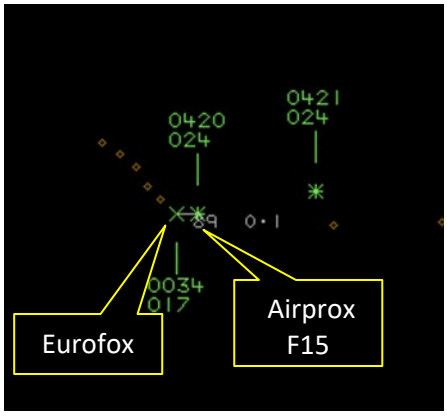


Figure 4. 1135:26 - CPA of lead F15, squawking 0420.

At 1135:26, no Traffic Information was passed [to the F15 pilot at this time]. CPA between the lead F15 and 0034 (Eurofox) was 0.1NM and 700ft Figure 4.

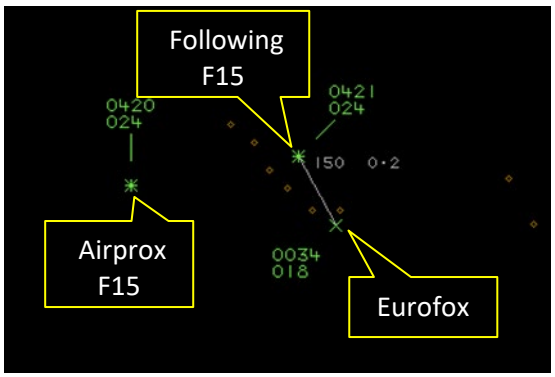


Figure 5. 1135:31 - second F15 aircraft squawking 0421.

At 1135:31, no Traffic Information was passed to the F15 pilot [at this time]. Separation between 0421 ([following] F15) and 0034 (Eurofox) was 0.2NM and 600ft, Figure 5.

Analysis

Traffic Information was provided on multiple occasions by the Leeming Approach controller. Due to the glider activity at Sutton Bank gliding site causing high traffic density, the Leeming Approach controller reduced the F15 Traffic Service due to the volume of traffic as expected. The Traffic Information provided by the Leeming Approach controller was accurate throughout with regular updates provided. The F15 pilot reported visual with some aircraft but it is not known if the Eurofox was seen. It is also not known if the Eurofox was visible on the Leeming radar.

The unit level investigation lacked any detail regarding the Leeming Supervisor as well as the workload of the Leeming controller, although it is believed the Leeming Approach controller was providing Traffic Information to at least one other aircraft. The investigation did highlight the requirement to coordinate between USAF and RAF Leeming during periods of exercises, which had been previously highlighted in an [event specific] DASOR the previous day. As a result of the investigation, coordination did take place and the F15 pilots did request a Traffic Service on the day of the Airprox.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. In the screenshots included in this analysis, the aircraft elevation is displayed as a flight level. The QNH at Topcliffe at the time of the event was recorded as 1020hPa and so 189ft (rounded to 200ft) should be added to the flight levels shown to convert them to an altitude.

In the lead-up to the Airprox the Eurofox was recorded maintaining a reasonably constant heading and a slow steady climb. The F15s could been seen to be operating in an altitude band between 2500ft and 2800ft, with a groundspeed in the region of 400kt. The minimum distance between the Eurofox and the lead F15 observed on the radar, radar CPA, was 0.1NM horizontally and 700ft vertically, see Figure 6. However, the lead F15 went on to pass behind the Eurofox, resulting in the actual horizontal separation being less than that recorded by the radar and as such has been recorded as <0.1NM.

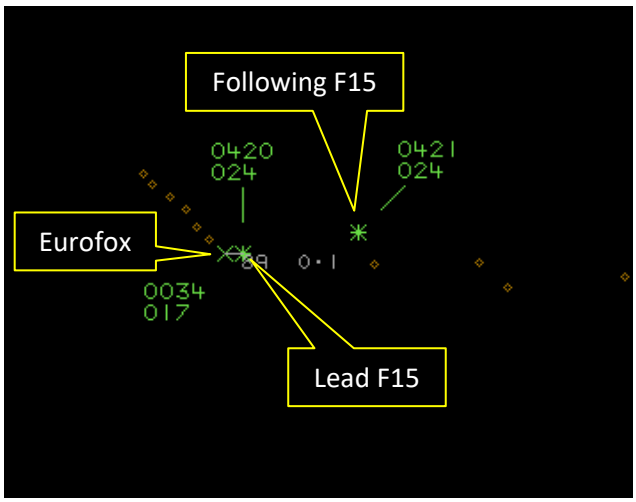


Figure 6 – 1135:26. Radar CPA

On the next radar sweep, approximately 4sec later, the radar showed that the second F15 had also passed behind the Eurofox, but at a greater range than the first F15, with the separation between them measuring 0.2NM and 600ft, Figure 7.

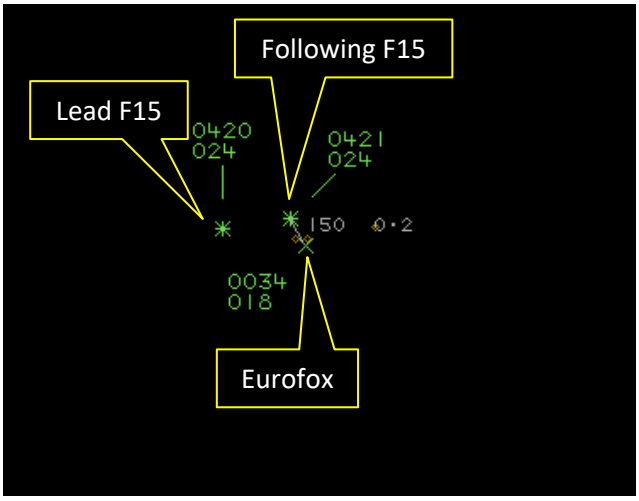


Figure 7 – 1135:30. Second F15 passed behind the Eurofox.

The Eurofox and F15 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[3] If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[4] When two aircraft are converging at approximately the same level, power-driven aircraft shall give way to aircraft which are seen to be towing other aircraft or objects.[5]

Comments

USAFE

Both crews ([Eurofox] and [F15]) are to be commended on their lookout in this highly contended and congested piece of airspace. It is by virtue of their excellent lookout that the crews were able to assess that no avoiding action was necessary and that flight operations maintained [in USAFE's view] normal safety parameters. The radar controller also persisted in their efforts to provide Traffic Information to the F15 pilots, despite having to reduce the service due to the challenging high traffic levels they were presented with. The controller gave Traffic Information on contacts with no height information and appeared satisfied that no Airprox had occurred at the reported time. Unusually, it

[3] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[4] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.
[5] (UK) SERA.3210 Right-of-way (c)(2)(iv) Converging. MAA RA 2307 paragraph 12(d).

appears the RAF Leeming radar did not show the Mode C of [the Eurofox] and as such the associated height information was not passed to the F15 crew. The F15 crews were working in a busy environment and although they carried out multiple avoids and sighted many light-aircraft and gliders on the day, none stuck out to them as being close enough to be concerned. The F15 crew did make the decision to abort their training objective in order to avoid the high density of aircraft in the area. The crew also adhered to the UK Military Low-Flying Handbook mandated 2NM/2000ft AGL avoid of Sutton Bank gliding site. It is disappointing that [the Eurofox pilot] did not report the Airprox to any ATC unit at the time.

The Vale of York is notified as an area of intense aerial activity for Military aircraft:

> UK AIP 5.2
>
> *Remarks: Considerable military fixed-wing and rotary flying training, including, in addition to airfield letdown procedures, exercises in practice forced landings, stalling, spinning, steep turns and formation flying.*
>
> *Advisory Measures: Pilots transiting the area are advised to maintain constant vigilance and a LARS is available from Leeming ATC on 133.375MHz.*
>
> *Hours: Peak activity takes place 0900 to 1700 Mon to Fri Winter (Summer 1hr earlier).*

In addition to this standing notification, the exercise planners also posted a NOTAM to provide extra warning to [the pilots of] aircraft transiting the area, of fast jets tactically manoeuvring and unable to comply with RAC. The NOTAM links to an AIC: Y 042/2020 which provides further details of what information can be provided by the ground tactical controller if they are contacted. It also includes the line “extreme caution should be exercised when transiting such notified areas”. Although the CPA was right on the edge of the NOTAM’d area, it would appear that the [Eurofox] pilot had not contacted any agency for information to transit the area.

Prior to operating in the area, the crews of the exercise aircraft liaised directly with RAF Leeming and Swanwick Mil to discuss their intentions and the objectives of the exercise, and acceptable plans were agreed with regards to service provision and requests.

USAFE remain in close contact with RAF Leeming safety and ATC teams to develop best practice due to the complexity and frequency of operations in the Vale of York area.

BGA

As notified in UK AIP ENR 5.5, aircraft operating from Sutton Bank airfield use VHF channel 118.685MHz (one of two "Common Glider Field Frequencies") as a Common Traffic Advisory Frequency when operating within 10NM radius and 3000ft AAL, using CAP 413 "Unattended Aerodrome" Phraseology.

The glider being towed by the Eurofox would have been at the same level, and approximately 50 metres behind it. Since the lead F15 passed about 200 metres (0.1NM) behind the Eurofox at CPA, its minimum horizontal distance from the glider would have been about 150 metres.

The Eurofox pilot later recalled that they spoke directly to the ATC Supervisor at Leeming less than 1 hour after the incident, stating their intention to file an Airprox; it's puzzling if this news took some days to reach other personnel at that unit.

It is very disappointing that the F15 formation continued conducting low-level, high-energy manoeuvres in the vicinity of Sutton Bank gliding site after the Leeming Radar controller had warned on multiple occasions of high traffic density in that area, and indeed had reduced the Traffic Information to the formation because of that high traffic density.

Summary

An Airprox was reported when a Eurofox and an F15 flew into proximity 6NM east of Topcliffe at 1135Z on Wednesday 27th July 2022. Both pilots were operating under VFR in VMC, the F15 pilot in receipt of a reduced Traffic Service from Leeming Approach and the Eurofox pilot not in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first considered the actions of the Eurofox pilot and was encouraged that they had been aware of the fast-jet activity, which would have given the pilot a generic awareness of the likelihood of encountering traffic (**CF4**). Members agreed that the Eurofox pilot had made some modifications to their operation as a result of the possibility of encountering fast-jet traffic, such as utilising the most appropriate runway for their operations also as to minimise the likelihood of penetrating the NOTAM'd area. However, after some discussion, the Board agreed that there had been additional adaptations to their plan that the Eurofox pilot could have made (**CF3**), such as calling the Leeming controller on the ground prior to launch. Members went on to discuss the airborne communications employed by the Eurofox pilot, and a gliding pilot member then briefed the Board on the challenges that are faced when towing a glider, and specifically the need to be in constant communication with both the glider pilot and safety personnel on the ground, making contacting an ATSU extremely difficult, which the Board acknowledged. Members noted that the Eurofox pilot had had EC equipment available to them however, this had not been compatible with the equipment fitted to the F15 (**CF5**). The Board discussed the interoperability of EC equipment and noted that there is a wide variety of EC devices that are available on the market to pilots, pointing out that not all are compatible with one another, and members agreed that it is for pilots to decide on their own requirements for additional equipment according to their needs. Members acknowledged that many pilots, particularly those using older EC equipment of the kind that is commonly employed by glider pilots, wish to upgrade their existing EC, however this could be expensive. The Board wished to highlight to pilots that additional funding has been made available for electronic conspicuity devices through the CAA's Electronic Conspicuity Rebate Scheme, which has been extended until 31st March 2023.[6] Members noted that the Eurofox pilot had visually acquired the F15 at an early stage however, due to their limited ability to manoeuvre when towing a glider, they had been concerned by the proximity of the F15 as it had approached (**CF6**).

Next, members considered the actions of the F15 pilot and a USAFE advisor[7] to the Board informed members that, prior to getting airborne, the F15 pilot had liaised with both Swanwick Mil and Leeming ATSU to formulate a plan for the day's activities. They also stated that the F15 pilot had planned to avoid Sutton Bank by 2000ft and 2NM, which they had done. Members acknowledged that the F15 pilots had had a generic awareness of the likelihood of encountering gliding traffic in the area (**CF4**), and that there had been an element of plan adaption to allow for other traffic operating outside the NOTAM'd area. The F15 pilots discontinued their lower level activity after the Airprox, however the Board agreed that further, earlier plan adaption could have taken place (**CF3**) at the point at which the pilot had been made aware of the high traffic density and their Traffic Service had been reduced. A glider pilot member stated that the BGA delivers regular briefings to USAFE personnel at Lakenheath and, although these primarily focus on issues in the more immediate vicinity of Lakenheath, the BGA would endeavour to widen the scope of these briefings to include details relevant to the Leeming and Topcliffe areas.

[6] Electronic conspicuity devices | Civil Aviation Authority (caa.co.uk)

[7] Airspace users who would like to contact USAFE agencies to discuss flight safety matters in the UK are invited to email: usafe-uk.a3@us.af.mil.

The Board then turned its attention to the ground element involvement and both military and civilian controller members stated that if the Leeming controller had had altitude information available to them relating to the traffic, then that would have been included in the Traffic Information which had been passed to the F15 pilot, leading the Board to agree that this information had been lacking. Members agreed that the controller had only had generic awareness of the traffic in the vicinity (**CF2**) and, although the controller had passed the best information that had been available to them, this Traffic Information had been inadequate (**CF1**).

Finally, the Board considered the risk involved in this Airprox. Members discussed that both the Eurofox and the F15 pilots had had a generic awareness regarding the likely presence of the other and that, although the Eurofox pilot had become visual with the F15 at an early stage, their relative lack of manoeuvrability had led them to be concerned. Due to the separation that had existed between the aircraft, the Board concluded that there had been no risk of collision however, safety had been degraded. Consequently, the Board assigned a Risk Category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022150			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
2	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Tactical Planning and Execution			
3	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
	• Situational Awareness of the Conflicting Aircraft and Action			
4	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance			
5	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
	• See and Avoid			
6	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C

Safety Barrier Assessment[8]

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Ground Elements:

[8] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the Leeming Approach controller had not had altitude information available for the Eurofox and as such was only able to provide generic Traffic Information to the F15 pilot.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because, although both pilots had had generic awareness of the likelihood of the presence of other aircraft, neither had sufficiently modified their plan accordingly.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the pilots of both aircraft had only had generic awareness of the likelihood of the presence of other aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC equipment carried by the Eurofox pilot had been incompatible with the equipment carried on the F15 had had therefore been unable to detect it.