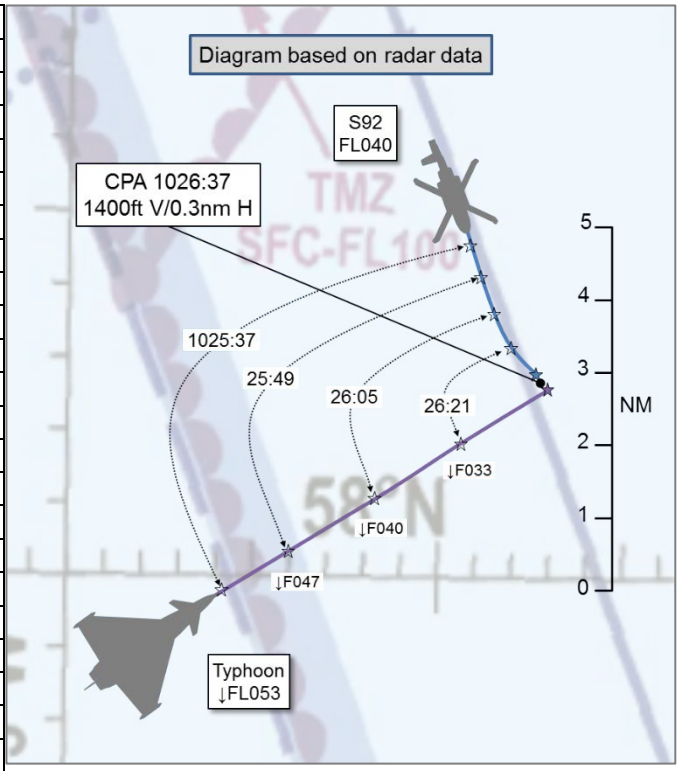
AIRPROX REPORT No 2019296

Date: 03 Oct 2019 Time: 1027Z Position: 5802N 00247W Location: 27nm NE of Lossiemouth

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	S92	Typhoon
Operator	Civ Comm	HQ Air (Ops)
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	IFR	VFR
Service	Traffic	None[1]
Provider	Lossie Approach	
Altitude/FL		
Transponder	A, C, S	A, C
Reported		
Colours	Red, White, Blue	Grey
Lighting	Strobe, HISL	
Conditions	IMC	NK
Visibility	0nm	
Altitude/FL	4000ft	
Altimeter	RPS (1013hPa)	
Heading	157°	
Speed	132kt	
ACAS/TAS	TCAS II	Not fitted
Alert	TA	N/A
Separation		
Reported	Not Seen	1000ft V/1.5nm H
Recorded	1400ft V/0.3nm H	



THE LOSSIEMOUTH APPROACH CONTROLLER reports that the Radar Approach controller was a trainee and she was the screen controller throughout; the workload and task difficulty were low. Two Typhoons had briefed them on the ground that they would work with [an aircraft carrier] before working in the D809 complex. They were advised by the Ground controller to free-call [the Lossiemouth Approach ICF] when ready to manoeuvre in the Moray Bowl. However, when in the vicinity of HMR X-Ray, one aircraft adopted a Swanwick(Mil) squawk and the other maintained 7001 while they were working in the vicinity of D809, mostly at low-level. Between 1020 and 1030Z, Lossiemouth Approach was controlling a rotary on HMR X-Ray at 4000ft, Orkney RPS 1013, under a Traffic Service. The Typhoons were seen to move and operate NE of Lossiemouth by about 15nm at approximately 6000ft before turning to head NE, almost directly at the helicopter. The helicopter was passed Traffic Information at 10nm, 5nm and 3nm, being informed that the traffic was a pair of Typhoons. The Mode C readout of the Typhoon return was seen to decrease from 044 to 038 whilst within 2nm of the rotary (which was maintaining 040). After the second traffic call, the rotary pilot requested the intentions of the formation and was informed that they were unknown. After the third traffic call, the rotary pilot informed them that he was climbing, then a short while later informed them that he was maintaining 4000ft; no mention was made of any contact on TCAS. Avoiding action wasn't deemed appropriate. The Typhoons continued to operate in the vicinity of the helicopter as they transited towards Aberdeen but maintaining a safe distance; their presence was noted on TCAS by the rotary pilot who asked the controller again if they were able to ascertain the intentions of the Typhoon pilots, and he was informed that the Typhoons were working autonomously. The ATC Supervisor had asked Swanwick(Mil) if they had radio contact and was told that the Typhoons had gone en-route. The Supervisor then conducted blind calls on [the Lossiemouth Approach ICF] to the Typhoons in case they were listening, but got no response.

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

[1] The Typhoon pilot believed that he was in receipt of an ATS from the aircraft carrier.

THE S92 PILOT reports that he was routing between Wick and Aberdeen at 4000ft and, while passing abeam EG D809, he observed an aircraft on TCAS approximately 15nm west-abeam his position and 2000ft above. The aircraft started to descend and continued towards his position and then passed below abeam, or slightly behind, his aircraft at an approximate distance of 3nm as he received a TA warning. The pilot took avoiding action by turning left onto a heading of 133°.

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

THE TYPHOON PILOT reports that he was tasked with supporting [an aircraft carrier] in the Moray Firth. After a short transit speaking to Swanwick Mil, they descended to low-level over the sea to remain VMC whilst checking-in with the carrier's approach controller.[2] Following a climb away from the carrier in close formation to simulate a departure from the ship, albeit starting at 1,500ft, he became aware of a Link 16 surveillance track in the vicinity of the operating airspace. Shortly after this, a courtesy radio call was made by the carrier. By this point they were in the descent back to low-level and still in close formation. He then visually acquired the contact, which he could now see to be a helicopter, at an estimated range of 1.5nm in his 10 o'clock and an estimated 1000ft above his aircraft. Until the courtesy call, he had not appreciated that the carrier was unable to provide information on conflicting traffic. A better plan would have been to have kept a listening watch with Lossiemouth Approach and to have accepted that the Service would have been intermittent given the nature and position of the tasking.

The pilot perceived the severity of the incident as 'Medium'.

THE AIRCRAFT COMMUNICATIONS COMPETENT OPERATOR (ACCO) reports that he was a qualified Air Traffic Controller but on the aircraft carrier acting as an ACCO due to the radar systems being uncertified for ATM at the time of the event. During trials involving 2 x Typhoons, traffic believed to be rotary-wing at 4000ft (indicated on their mode C) was seen in the area of operations. The Typhoon pair was indicating 6000ft heading NE towards the rotary-wing, which was tracking approximately 170°. Traffic was not initially called due to the ATM equipment not being certified and the belief that the pair was receiving a Service from an appropriate ATSU. The controller remarked to the SATCO that it was uncomfortable not calling traffic that would be within 3000ft and 5nm. The contacts continued to close and altitude started to decrease on the 'C' indication of the pair. This continued until <1000ft separation existed within 5nm between the contacts. SATCO then made the call to pass Traffic Information for duty-of-care as the contacts continued to close horizontally and vertically; they were indicating similar level between 2½-3 nm. The pair continued to descend then called visual when indicating approximately 400ft below the rotary-wing. The controller asked the Typhoon pilot if the traffic had been called (still assuming that they were under the control of another unit) and was informed that they were not speaking to anyone else. He reinforced that Traffic Information was passed from an uncertified system in the interest of duty-of-care.

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

THE LOSSIEMOUTH SUPERVISOR reports that [the Typhoon formation C/S] was known to have routed to operate on the west coast prior to working the D809's. On seeing a 7001 squawk coasting-out at Helmsdale, she believed that to be [the Typhoon formation C/S] and expected them to free-call for radar pick-up for transit to the D809's. She observed the aircraft's transponder code change from 7001 to a Swanwick(Mil) squawk, so knew that they had free-called Swanwick(Mil) directly. There was no traffic on frequency at the time. A few minutes later, she noticed that the aircraft had descended to low-level and appeared to be operating approximately 25nm NE of Lossiemouth, in the vicinity of HMR X-Ray. One aircraft was still indicating a Swanwick(Mil) squawk and the other was indicating a 7001 squawk. She knew from an earlier conversation that [the Typhoon formation C/S] was intending to work with the [aircraft carrier]. The Radar Approach controller took a pre-note from Wick on a helicopter routing to Aberdeen along HMR X-Ray at 4000ft. As soon as the Supervisor heard this pre-note, she could see the potential for confliction with [the Typhoon formation C/S], which was still indicating low-level in the vicinity of HMR-X-Ray. She increased the range of the radar screen and could see the helicopter approximately 5nm N of Wick. Knowing that [the Typhoon formation C/S] had been speaking

[2] The Typhoon pilot believed that he could receive an ATS from the aircraft carrier – this was not the case as the carrier's equipment had yet to be certified.

to Swanwick(Mil), and the fact that one aircraft was still indicating a Swanwick(Mil) squawk, she called them to see if they still had comms with the Typhoons. Swanwick(Mil) advised that [the Typhoon formation C/S] had descended and had left their frequency, working with the [aircraft carrier]. She advised Swanwick(Mil) that there was a helicopter that would be routing along HMR X-Ray at 4000ft, and that if, by chance, [the Typhoon formation C/S] called them again, could they relay the Traffic Information to them. Once [the S92 C/S] pilot was on frequency, he was established at 4000ft on the RPS and was under a Traffic Service. The helicopter was tracking S along HMR X-Ray towards the manoeuvring Typhoons, which were still indicating low-level. She selected the Lossiemouth ICF on the off-chance that [the Typhoon formation C/S] was listening-out. She made a number of blind broadcasts to try and gain comms with them but they were not on frequency. With the Typhoon pilots' intentions unknown, Traffic Information was passed to the helicopter pilot based on the SSR data from the Typhoons. The Supervisor also believed that [the Typhoon formation C/S] would probably see the helicopter on their onboard radar and that they were probably getting Traffic Information from the [aircraft carrier]. Usually, if it is known who is working the traffic, she would call them to establish intentions and a height block, and coordinate if necessary. However, they did not have 2-way comms with the [aircraft carrier] so this was not possible. Before the helicopter got close to [the Typhoon formation C/S], the Typhoons were observed routing 10nm W and climbing to FL60. At this point, she thought they were complete and expected a free-call for recovery; however, they then turned eastbound again and started to descend. Their track took them across the path of the helicopter and through its level, so Traffic Information was passed to the pilot of the helicopter and updated. She observed the Typhoon SSR data at 041 and, on the next sweep, 038 as the Typhoons passed in front of the helicopter at a range of approximately 1-1½nm. Once the helicopter was well clear, she called the Duty Commander Flying (DCF) to discuss what had happened, stating that the Typhoons had passed very close to the helicopter and that it appeared that the [aircraft carrier] was positioned below HMR X-Ray (the ship was not seen on radar). HMR X-Ray is used regularly for helicopter transits which are worked by Lossiemouth on [a VHF frequency]. She suggested that if the Typhoons need to operate in that area then it would be better if they were receiving a Service or listening watch from Lossiemouth. This would then allow ATC to pass Traffic Information on any rotary traffic. The DCF said that it was Class G airspace and they would not avoid working there just because of the HMR. He said he would gain more information from the pilot once he had landed and get the pilot to call her to discuss the event. She spoke to the pilot later that day and advised him that she saw the potential confliction early when the helicopter was pre-noted, but had no way of passing this information to him. He thanked her for trying to get the message to him via Swanwick(Mil) and the Lossiemouth ICF and confirmed that the helicopter was called to him by the ship, but very late. She explained that the helicopter pilot seemed to report climbing as they passed in front of him and she didn't know if this was a result of a TCAS alert or just from gaining visual with the Typhoons.

Factual Background

The weather at Lossiemouth was recorded as follows:

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METAR EGQS 031021Z 09006KT 9999 SCT022 BKN040 10/08 Q1016 BECMG SCT025 RMK WHT BECMG
BLU=
METAR EGQS 031050Z 09006KT 9999 SCT018 BKN035 11/08 Q1015 BECMG SCT025 RMK WHT BECMG
BLU=
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Analysis and Investigation

Military ATM

The S92 was transiting along HMR X-Ray toward Aberdeen at 4000ft in receipt of a Traffic Service from Lossiemouth Approach. The Typhoons had pre-briefed Lossiemouth ATC that they intended to work in the Moray Firth with [the aircraft carrier] and then onward to the D809 complex. The Typhoons contacted [the aircraft carrier] but, because the radar on-board had not been certified, it could not be used for the provision of an ATS although it was radiating and displaying the incident aircraft. The ACCO was under the impression that the Typhoons were receiving an ATS from another agency. In the lead-up to this incident, the Lossiemouth Approach Controller passed Traffic Information to the S92 on three occasions. Having seen the situation develop, the SATCO onboard

[the aircraft carrier] took the decision to pass Traffic Information to the Typhoons under duty-of-care, even though the radar was not certified. It was not until after the incident that the ACCO became aware that the Typhoons were not receiving an ATS from another agency.

Figures 1-4 show the positions of the S92 and Typhoons at relevant times in the lead-up to, and during, the Airprox. The Lossiemouth Approach Controller passed Traffic Information to the S92 on the Typhoons for the first time at a range of 10nm. At this point there was still 2000ft vertical separation between the aircraft.

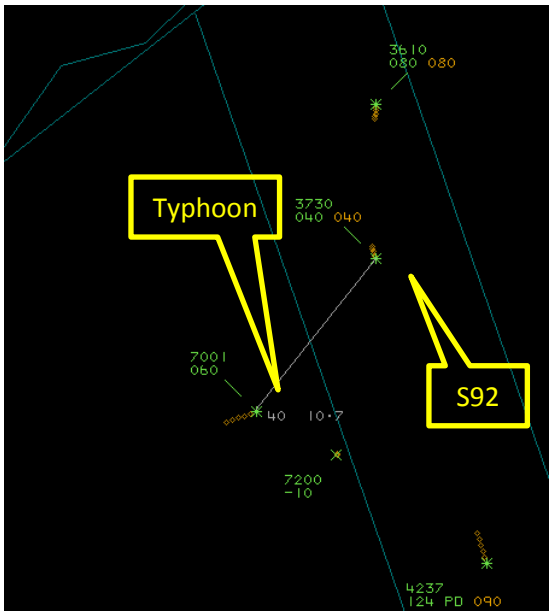


Figure 1 – 1st Traffic Information to the S92

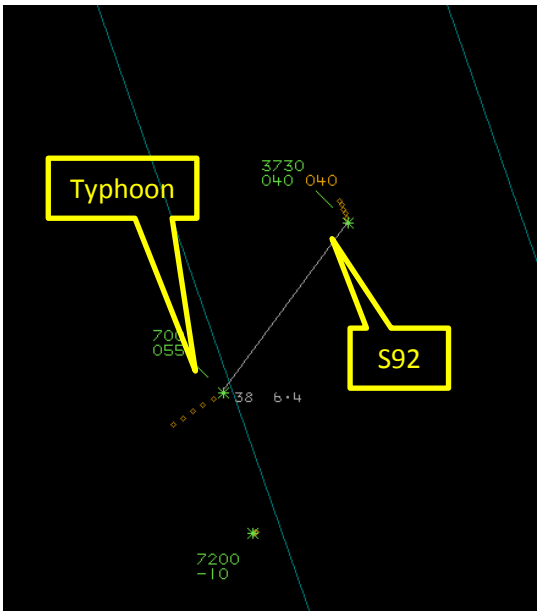


Figure 2 – Traffic Information to both aircraft

As the separation between the aircraft decreased, the Lossiemouth Approach Controller passed Traffic Information for a second time, and this was almost concurrent with the decision by [the aircraft carrier]'s SATCO to pass Traffic Information to the Typhoons. Separation at this point was 6.5nm and 1500ft.

The Lossiemouth Approach Controller passed Traffic Information for a final time as the separation decreased to 3.5nm and 100ft. At the same time, the Typhoons reported visual with the S92 to the ACCO on [the aircraft carrier].

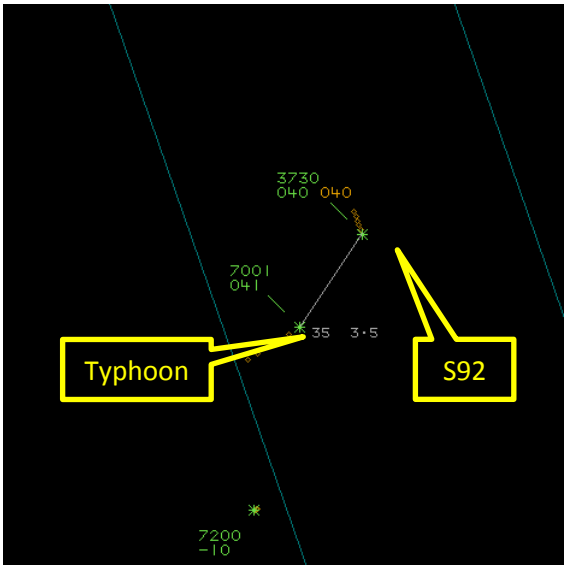


Figure 3 – Final Traffic Information

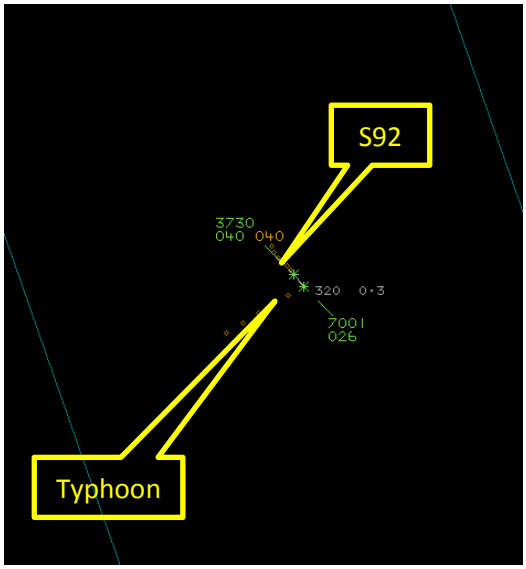


Figure 4 – CPA

CPA occurred some 30 secs after this final Traffic Information call, and was measured at 0.3nm and 1400ft.

The Lossiemouth Approach Controller recognised the growing confliction and passed timely Traffic Information to the S92 on three occasions. From the local investigation, it is apparent that the information provided to the Typhoons by [the aircraft carrier] allowed them to become visual with the S92, albeit only 30 secs prior to CPA.

UKAB Secretariat

The S92 and Typhoon 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 converging then the S92 pilot was required to give way to the Typhoon.[4]

Occurrence Investigation

[The Typhoon formation] briefed Lossiemouth ATC on the ground that they would be working with the [aircraft carrier] in the D809 complex. They were advised by Ground to free-call [the Lossiemouth Approach ICF] when ready to manoeuvre in the Moray Bowl. However, when in the vicinity of HMR X-Ray, one Typhoon remained on a Swanwick(Mil) squawk whilst the other squawked 7001; this was an oversight on the part of the pilot of the aircraft remaining on a Swanwick(Mil) squawk. Lossiemouth ATC's perception was that [the Typhoon formation] would be working in the vicinity of HMR X-Ray, mostly at low-level, before entering D809 as briefed. The Swanwick(Mil) squawk led Lossiemouth ATC to believe that [the Typhoon formation] was still working with Swanwick(Mil). [The lead Typhoon pilot] stated in interview that the plan was to carry out the first half of the sortie at low-level on the west coast of Scotland, then return to the east coast and enter the Moray Bowl at Helmsdale, expecting to be airborne tasked by [the aircraft carrier]. After a short transit, and whilst speaking to Swanwick(Mil), [the Typhoon formation] descended to low-level over the sea to remain VMC whilst checking in with the ACCO on the [aircraft carrier]. On descent into the Moray Bowl, [the Typhoon formation] discovered that [the aircraft carrier] was considerably closer than expected, because it had manoeuvred out of D809 to the west. [The aircraft carrier] had vacated D809 because they had noticed that the Danger Area had been booked by another unit. Between 1020 and 1040Z, the Lossiemouth Approach controller was controlling a rotary-wing on HMR X-Ray at 4000ft, under a Traffic Service. Having left Swanwick(Mil)'s frequency, [the Typhoon formation] was not in contact with Lossiemouth ATC and was only speaking to [the aircraft carrier]'s ACCO. The ACCO briefed [the Typhoon formation] on the preferred profiles required to facilitate their tasking, including heights, speeds and climb-out rates. Prior to 10:24:00, following a climb-away from [the aircraft carrier] at 1500ft in close formation, [the Typhoon formation] became aware of a Link 16 surveillance track inside their operating airspace. The ACCO stated that, during the 'Trials' with [the Typhoon formation], traffic believed to be a helicopter at 4000ft (indicated on Mode C), was seen entering the area of operations from the North.

10:24:51 – Lossiemouth ATC passed traffic information to [S92 C/S] stating: "*pair of Typhoons right 2 o'clock at 10nm, tracking east*".

10:25:01 – [S92 C/S] acknowledged.

10:25:27 – [The aircraft carrier]'s ACCO asked [the Typhoon formation] if they were aware of another aircraft in their area indicating similar level believed to be NE at 4nm. [The Typhoon formation] stated "*Looking Out"*.

10:25:33 – Lossiemouth ATC reported that [the Typhoon formation] was seen to manoeuvre 15nm to the NE of Lossiemouth at approximately 6000ft, descending before suddenly turning to head NE,

[3] SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[4] SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

almost directly at the helicopter. Lossiemouth ATC informed [S92 C/S] that traffic, believed to be 2 Typhoons, was now 2 o'clock at 5nm, 1000ft above. [The aircraft carrier]'s ACCO stated [the Typhoon formation] was indicating 6000ft, descending and heading NE towards the helicopter which was tracking approximately 170° at 4000ft.

10:25:53 – After this second traffic call from Lossiemouth ATC, the pilot of the [S92 C/S] asked if [the Typhoon formation] intended passing through their level. Lossiemouth ATC replied that they weren't talking to [the Typhoon formation].

10:26:03 – Lossiemouth ATC informed [S92 C/S] that traffic, believed to be 2 Typhoons, was now 2 o'clock at 3nm, tracking NE.

10:26:07 – [The aircraft carrier]'s ACCO informed [the Typhoon formation] that they were now below the previously called traffic. Lossiemouth ATC stated that the Mode C readout of the Typhoon return was seen decreasing from 4400ft to 3800ft whilst within 2nm of the rotary, which was maintaining 4000ft. The OSI team considered that this was the closest point of approach between the two aircraft measured at 2.5nm, co-altitude, on [the aircraft carrier]'s Medium Range Radar picture.

10:26:10 – [The Typhoon formation] continued to descend, then called visual once indicating approximately 400ft below the RW.

10:26:12 – After the third traffic call, the pilot of the rotary-wing informed Lossiemouth ATC that they were climbing then, a short while later, that he was changing his intentions to maintain 4000ft. At no time did the rotary-wing pilot mention to Lossiemouth ATC any contact on TCAS. [The aircraft carrier]'s ACCO continued to update [the Typhoon formation] with the position of the rotary-wing. Mode C information from [the aircraft carrier]'s Medium Range Radar shows the vertical separation at the point that [the Typhoon formation] passed below [S92 C/S] to be 1500ft; the Typhoons continued to manoeuvre in the vicinity of the helicopter as it transited towards Aberdeen, maintaining a safe distance. [The Typhoon formation]'s presence was eventually noted on TCAS by the pilot of the helicopter, who again asked Lossiemouth ATC if they were able to ascertain their intentions, as he was concerned that the Typhoons may climb back up to 4000ft. Lossiemouth ATC again informed the pilot that the Typhoons were working autonomously. The Lossiemouth ATC Supervisor had asked Swanwick(Mil) if they were in contact with [the Typhoon formation] but was told that the Typhoons had "gone en-route". Lossiemouth ATC then conducted blind calls on [the Lossiemouth Approach ICF] to the Typhoons but got no response.

[The pilot of the S92] flew as directed by Lossiemouth ATC. He remained on HMR X-Ray throughout the incident and was in receipt of a Traffic Service. No avoiding action was given by Lossiemouth ATC because no risk of collision was perceived. [The lead Typhoon pilot] had the rotary-wing displayed on his MHDD,[5] and had used his on-board sensors to verify when he had passed through its altitude. [The lead Typhoon pilot] estimated that this occurred at 4nm and that the rotary-wing presented no risk of collision. [The aircraft carrier]'s ACCO did not initially call the traffic due to the ATM equipment not being certified and in the belief that [the Typhoon formation] was receiving a Traffic Service from an appropriate ATSU. It was not until [the aircraft carrier]'s radar indicated less than 1000ft separation existed with 5nm between contacts that [the aircraft carrier]'s SATCO made the decision to pass Traffic Information as a 'duty-of-care'. [The aircraft carrier]'s ACCO passed the information and later reinforced to [the Typhoon formation] that that this Traffic Information was passed from an uncertified system and only in the interests of 'duty-of-care'. [The lead Typhoon pilot] stated in interview that he had not appreciated that the carrier was unable to provide information on conflicting traffic. The OSI team considered that this may have been due to a misunderstanding of the Service that could be offered by an ACCO, as this limitation had been mentioned by [the aircraft carrier] prior to the sortie. [The Typhoon formation] was not sure of the exact location of [the aircraft carrier] as they descended into the Moray Bowl. [The aircraft carrier] had to relocate from D809 because it had been booked by another entity. The OSI team noted that co-incidentally it was [the Typhoon formation] that had booked D809 for this period with the intention of working with [the aircraft carrier]. This relocation had brought [the aircraft carrier] considerably

[5] Multifunction Head Down Display

closer to Helmsdale, almost directly beneath HMR X-Ray, and thus gave [the Typhoon formation] less time for reactive planning as they descended into the Moray Bowl.

Recommendations made include:

1. That Typhoon STANEVAL remind aircrew that they are to precisely understand what ATC Services can be provided by Naval Controllers/assets before operating with them.

2. That RAF Lossiemouth's STANEVAL reminds RAF Lossiemouth-based aircrew that the FOB mandates a Traffic Service when operating in the Moray Bowl west of Y904. RAF Lossiemouth STANEVAL is also to inform RAF Coningsby of the requirement.

3. Typhoon STANEVAL is to remind all aircrew that, during mission planning, they are to ensure all available tasking documentation is reviewed thoroughly and any ambiguities clarified. In this specific case, the acronym ACCO (Aircraft Communications Competent Operator) and the Traffic Service an ACCO can or, more importantly, cannot provide.

Comments

HQ Air Command

This occurrence may not be a typical Loss of Safe Separation event because the Typhoon pilots eventually had SA of the S92 on HMR X- Ray, which was provided by the Aircraft Communications Competent Operator (ACCO) on board [the aircraft carrier]. However, it was entirely appropriate for the Lossiemouth controller, with the SA that they had at the time, to raise an Airprox with the potential for an unsafe situation to occur. The review carried out by RAF Lossiemouth raised five recommendations, which did not only span the investigation of the Airprox, but also the tasking process and pre-flight planning.

This incident highlights the importance of effective communication and detailed planning, particularly when working outside the norm. The communication and planning broke down during several stages before the task arrived at the squadron. When it had arrived, the objectives were not clear and assumptions were made, importantly, with the service [the aircraft carrier] could provide – or not – in this case. Both RAF Lossiemouth and Coningsby are to review how they conduct the tasking process and ensure there is an appropriate level of scrutiny for future tasking. Typhoon crews will also be reminded to ensure all tasking documentation is reviewed thoroughly and any ambiguities clarified and to precisely understand what ATC Services can be provided by Naval Controllers/assets before operating with them. If this had been done, the crews of the Typhoons would have known that [the aircraft carrier] could not provide a service because the ATM equipment was not certified for use and would therefore have required a Traffic Service from another agency, as mandated by the RAF Lossiemouth Flying Order Book.

Navy HQ

A comprehensive investigation into this Airprox was conducted including detailed recollection from all aircrew and ATC staff together with information of the planning process for this flying activity with [the aircraft carrier].

[The aircraft carrier] confirmed from the outset, both in initial email contact, through telephone conversations and on the ICF, that an ATS would not be provided due to uncertified ATM equipment and only an ACCO service would be provided. It was therefore assumed that the aircraft would be under an ATS from a shoreside unit. The [aircraft carrier]'s controller executed their duty-of-care responsibility appropriately, calling the conflicting traffic when a risk of collision was assessed with a caveat that the information could not be assured. However, this Airprox highlights the importance of formal and robust planning and briefing for all aviation activities in advance of the serial, particularly when operating with an RN ship. Incorrect assumptions were made regarding the operating area and ATS available from the ship. Confusion was evident regarding the nature of the tasking because not all information had originated from an appropriate tasking authority. Aircrew

had not planned to receive an ATS from a shoreside unit because, although they had been informed to the contrary, they believed they could receive an ATS from [the aircraft carrier].

Overall, this Airprox identifies the need for appropriate tasking requests through the correct channels to ensure full understanding of the task and allow appropriate planning to take place. This includes ensuring that an ATS can be received from an alternative unit to the one they are operating with, in this case [the aircraft carrier], who had informed them they could not fulfil this function.

Summary

An Airprox was reported when a S92 and a Typhoon flew into proximity in the Moray Bowl at 1027hrs on Thursday 3rd October 2019. The S92 pilot was operating IFR in IMC and the Typhoon pilot was operating VFR in VMC. The S92 pilot was in receipt of a Traffic Service from Lossiemouth Approach and the Typhoon pilot was not in receipt of a Service, although he believed that he was receiving an [undefined] ATS from the aircraft carrier.

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. 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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments. Although not all Board members were present for the entirety of the meeting and, as a result, the usual wide-ranging discussions involving all Board members were more limited, sufficient engagement was achieved to enable a formal assessment to be agreed along with the following associated comments.

The Board first considered the actions of the Typhoon pilot and quickly agreed that the vital information concerning the aircraft carrier's limitations regarding ATS provision had unfortunately not reached the him pre-flight and so had not been included in his planning (**CF3**). Notwithstanding, members agreed that, although there had been no formal agreement of an ATS on initial contact, the Typhoon pilot was nonetheless under the impression that he had been receiving an ATS from the aircraft carrier (**CF4**), which had led to him inadvertently not complying with the RAF Lossiemouth Flying Order Book (**CF2**) that required him to operate under a Traffic service in that area. That being said, members noted that the passage of Traffic Information under 'duty of care' from the aircraft carrier, coupled with his own radar detecting a track, had enabled the Typhoon pilot to gain visual with the S92 early enough for there to be no requirement for either pilot to manoeuvre for separation (**CF6**).

Turning to the actions of the S92 pilot, the Board commended his actions in seeking more information on the expected flight profile of the Typhoons from the Lossiemouth controller. However, some members wondered whether he would have been better served agreeing a Deconfliction Service, rather than a Traffic Service, while flying in IMC. Other members commented that the pilot was proactively responding to the information he received, both from his TAS (**CF5**) and the Traffic Information, so a Deconfliction Service would have served little more purpose in this case.

Members then discussed the actions of the controllers[6] involved, and commended the ACCO onboard the aircraft carrier for having passed timely Traffic Information to the Typhoon pilot, even though his radar equipment was uncertified for this purpose. The Board also wished to commend the controlling team at Lossiemouth who, having become concerned with the proximity of the Typhoons to the S92 (**CF1**), pro-actively tried a number of alternative means to contact the Typhoon formation and inform the pilots of the presence of the helicopter.

[6] For the purposes of the discussion, the ACCO was considered to be a 'controller'.

In assessing the risk of this Airprox, members were cognisant that a number of barriers had been either breached or weakened in the build up to the event, and were grateful for the in-depth investigation carried out by the Typhoon pilot's home base; in particular, the Board was heartened to learn of the recommendations made to address the local communication issues. Although the S92 pilot reported not having seen the Typhoon, the Typhoon pilot had become visual with the S92 at a range of approximately 1½ nm and a vertical separation already approaching 1000ft. Accordingly, the Board assessed that normal safety parameters for flight in Class G airspace had pertained; Risk Category E.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2019296		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Situational Awareness and Action		
1	Human Factors	• Personnel Perception Events	Concerned by the proximity of the aircraft
	Flight Elements		
	• Regulations, Processes, Procedures and Compliance		
2	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
	• Tactical Planning and Execution		
3	Organisational	• Flight Planning Information Sources	Inadequate planning material
4	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
	• Electronic Warning System Operation and Compliance		
5	Contextual	• ACAS/TCAS TA	TCAS TA / CWS indication
	• See and Avoid		
6	Human Factors	• Monitoring of Other Aircraft	Sighting report

Degree of Risk: E

Safety Barrier Assessment[7]

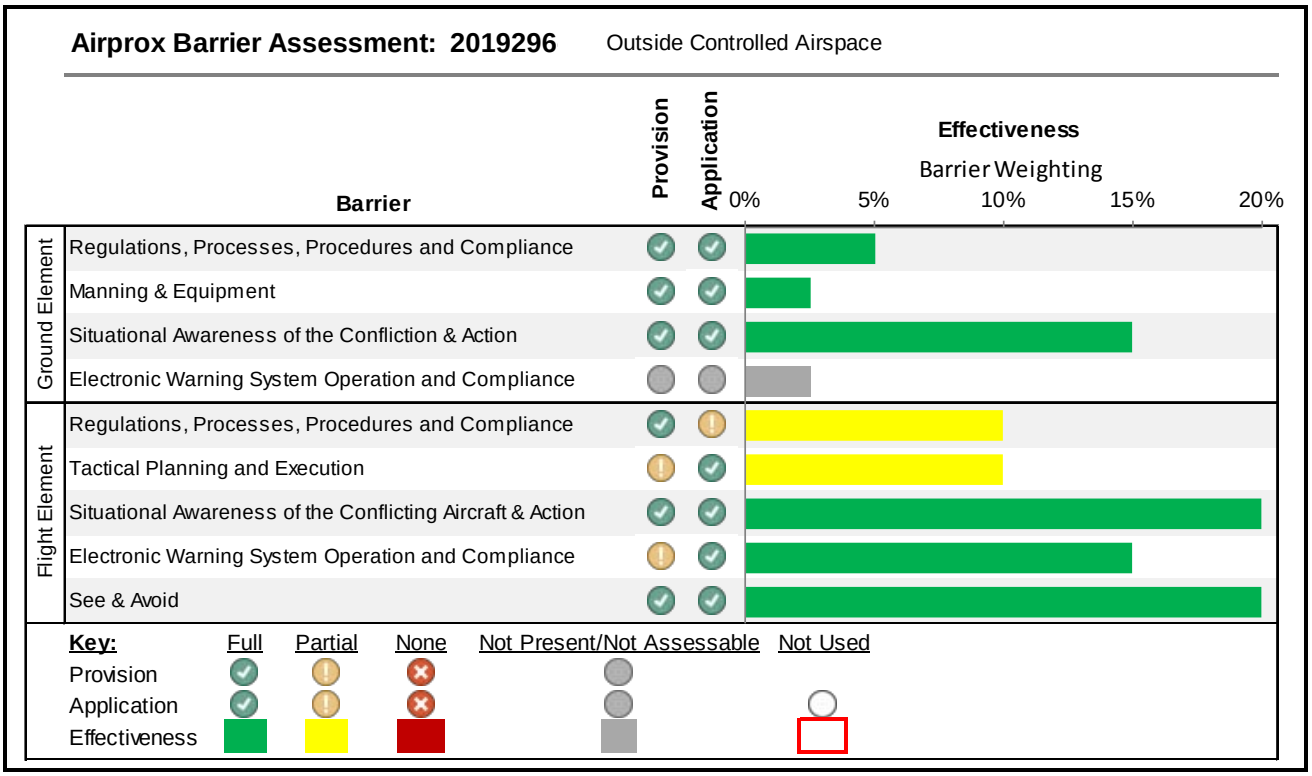
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because, although he believed he was receiving a Traffic Service from the aircraft carrier, the Typhoon pilot inadvertently did not comply with the requirement to be in receipt of a Traffic Service in the Moray Bowl.

Tactical Planning and Execution was assessed as **partially effective** because the Typhoon pilot did not receive the information from Lossiemouth Operations that [the aircraft carrier] would be unable to provide Air Traffic Services.

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


Airprox Barrier Assessment: 2019296
Outside Controlled Airspace
Barrier
Provision
Application
Effectiveness
Barrier Weighting
0%
5%
10%
15%
20%
Ground Element
Regulations, Processes, Procedures and Compliance
Manning & Equipment
Situational Awareness of the Confliction & Action
Electronic Warning System Operation and Compliance
Flight Element
Regulations, Processes, Procedures and Compliance
Tactical Planning and Execution
Situational Awareness of the Conflicting Aircraft & Action
Electronic Warning System Operation and Compliance
See & Avoid
Key:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness