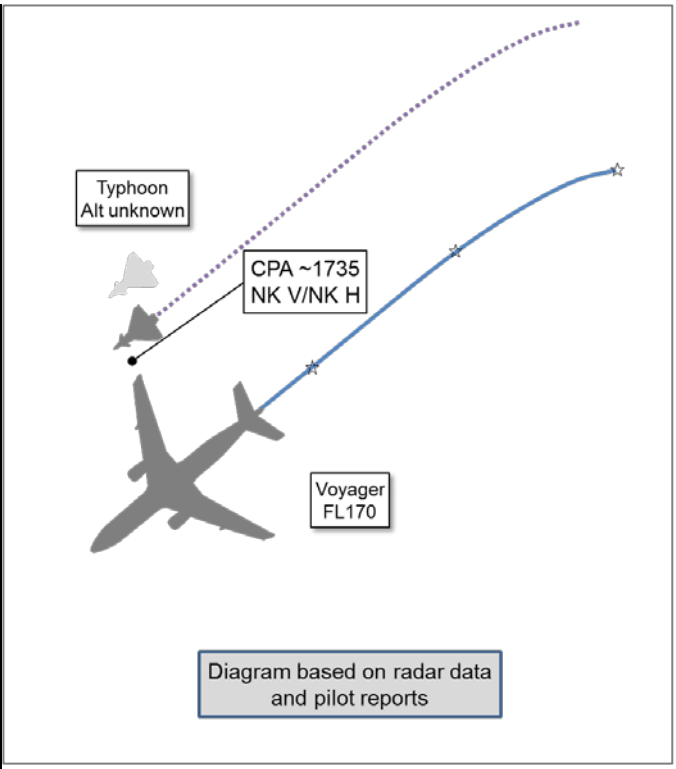
AIRPROX REPORT No 2019333

Date: 16 Dec 2019 Time: 1735Z Position: 5508N 00007E Location: 60NM ENE of Newcastle

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Voyager	Typhoon
Operator	HQ Air (Ops)	HQ Air (Ops)
Airspace	EG D323A	EG D323A
Class	Danger Area	Danger Area
Rules	VFR	VFR
Service	Traffic	Traffic
Provider	Swanwick(Mil)	Swanwick(Mil)
Altitude/FL	FL170	(FL170)
Transponder	A, C, S	Standby (as per SOP)
Reported		
Colours	Grey	NR
Lighting	Nav, Formation	NR
Conditions	VMC	VMC
Visibility	50km	NR
Altitude/FL	FL170	FL170
Altimeter	1013hPa	1013hPa
Heading	240°	NR
Speed	280kt	NR
ACAS/TAS	TCAS II	Not fitted
Alert	None	N/A
Separation		
Reported	0ft V/30-40m H	NR
Recorded	NK	



THE VOYAGER PILOT reports that, during the night phase of an AAR[1] sortie and after successful completion of an AAR bracket, a pair of Typhoons was cleared to leave the tanker and re-contact Swanwick(Mil). The tanker co-pilot observed one of the Typhoons converge with the tanker from the echelon-right position and made a radio call "*watch out, watch out*". The Typhoon pilot then adjusted heading to move away from the tanker. The co-pilot stated that the receiver got close enough for him to make out the grey paintwork of the aircraft (not discernible in normal echelon position at night); because it was night it is hard to assess the distance. The whole bracket was conducted with the receivers on NVG[2] and the tanker aircraft's external lights set accordingly. The tanker did have some unserviceable formation lights, which meant that all surveillance lighting was switched on and confirmed serviceable.

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

THE TYPHOON PILOT reports that, following successful completion of an NVG AAR conversion exercise, his formation was in echelon-right with the tanker, with his aircraft as the closest to the tanker. He directed the flight to change to the briefed frequency while maintaining echelon-right in order to depart the tanker. Having momentarily glanced away to enter the new frequency, he heard a call of "*watch it, watch it*" from the tanker crew, so he switched focus back to the tanker and started a gentle turn away. The picture appeared to be correct and safe from the Typhoon formation's perspective, with no apparent reduction in safe separation, but he accepts that the tanker crew's perspective may have been different and thus it was a timely call from them.

[1] Air-to-Air Refuelling.
[2] Night Vision Goggles.

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

THE TYPHOON SUPERVISOR reports that he reviewed the Typhoon mission recordings and spoke extensively with the Typhoon pilots involved in the incident and, from a Typhoon perspective, nothing untoward appears to have happened. However, the Voyager crew perceived there to be an excessive rate of closure/reduced separation and they did absolutely the right thing by making the 'watch it' call.

THE SWANWICK(MIL) CONTROLLER did not submit a report.

Factual Background

The weather at Newcastle was recorded as follows:

```
METAR EGNT 161720Z 21009KT 170V230 9999 FEW030 04/00 Q0995=
METAR EGNT 161750Z 21009KT 170V240 9999 FEW030 04/01 Q0996=
```

Analysis and Investigation

Military ATM

The Typhoon was one of a pair of aircraft which had just completed a night vision goggle air-to-air refuelling task and was in echelon-right with the Voyager. Shortly after the Typhoons were cleared to depart, the Voyager co-pilot noticed the Typhoon begin to converge with the Voyager and made a radio broadcast for the Typhoon to "*watch out"*.

Because the incident occurred on the refuelling frequency, the Swanwick(Mil) controller was unaware anything was amiss, and nothing was declared on frequency. Given the range scale of the radar in use (circa 80NM) it would have been impossible for the Swanwick(Mil) controller to detect the movement of the Typhoon and therefore the controller would not have been able to intervene to prevent the incident occurring.

UKAB Secretariat

Air-to-Air refuelling is conducted in accordance with the NATO Standards Related Document National SRD – United Kingdom.[3] In the UK, separation between aircraft comprising a formation of military aircraft is the responsibility of the formation leader (MARSA).[4]

Comments

HQ Air Command

This Airprox was subject to a local investigation and, after the review of the Head Up Display (HUD) tapes showing that there was no Loss of Safe Separation, no recommendations were made. However, the crew of the Voyager was entirely correct to raise the alarm, because staying silent would be inappropriate. Because the Typhoon pilot holds the collision avoidance responsibility, any deviation towards the Voyager, combined with the potential for visual illusions at night, would be most concerning for the Voyager crew. This is highlighted by the difference in the perception of the risk for both DASORs – 'Very High' for the Voyager and 'Negligible' for the Typhoon.

Summary

An Airprox was reported when a Voyager and a Typhoon flew into proximity in AARA[5] 6 at 1735hrs on Monday 16th December 2019. Both pilots were operating under VFR in VMC; the Voyager pilot was in receipt of a Traffic Service from Swanwick(Mil) and the Typhoon pilot was in formation with the Voyager.

[3] Specifically, Annex C, Appendix C1
[4] MAA RA 3234 paragraph 2.
[5] Air-to-Air Refuelling Area.

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 heard from a military member, who stated that this incident demonstrated how pilots can feel vulnerable when flying in close formation at night and also how one pilot's perception of events can be significantly different from another's. Members quickly agreed that, having felt uncomfortable with the relative position of the Typhoon and having perceived a relative movement towards his aircraft (**CF2**), the Voyager pilot had taken absolutely the correct course of action in calling over the radio for the Typhoon pilot to check his aircraft's attitude and rate-of-closure. Discussing the reasons why the Voyager pilot had perceived that the Typhoon was closing on his aircraft when, from post-flight analysis of the Typhoon's mission data, the movement – if any – had been negligible, the Board concluded that the Voyager pilot's perception had been influenced by the prevailing light conditions at the time and could be best defined as a visual illusion at night (**CF1**) .

Turning to the risk involved, the Board noted that night air-to-air refuelling is commonplace for the military and, after post-flight analysis, that this event had been considered by the operators to be 'normal operations'. Consequently, members agreed that normal safety standards and parameters had pertained and that there had been no risk of collision; Risk Category E.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2019333		
CF	**Factor**	**Description**	**Amplification**
	Flight Elements		
	• See and Avoid		
1		• Any other event	**Visual illusion at night**
2	Human Factors	• Perception of Visual Information	Pilot was concerned by the proximity of the other aircraft

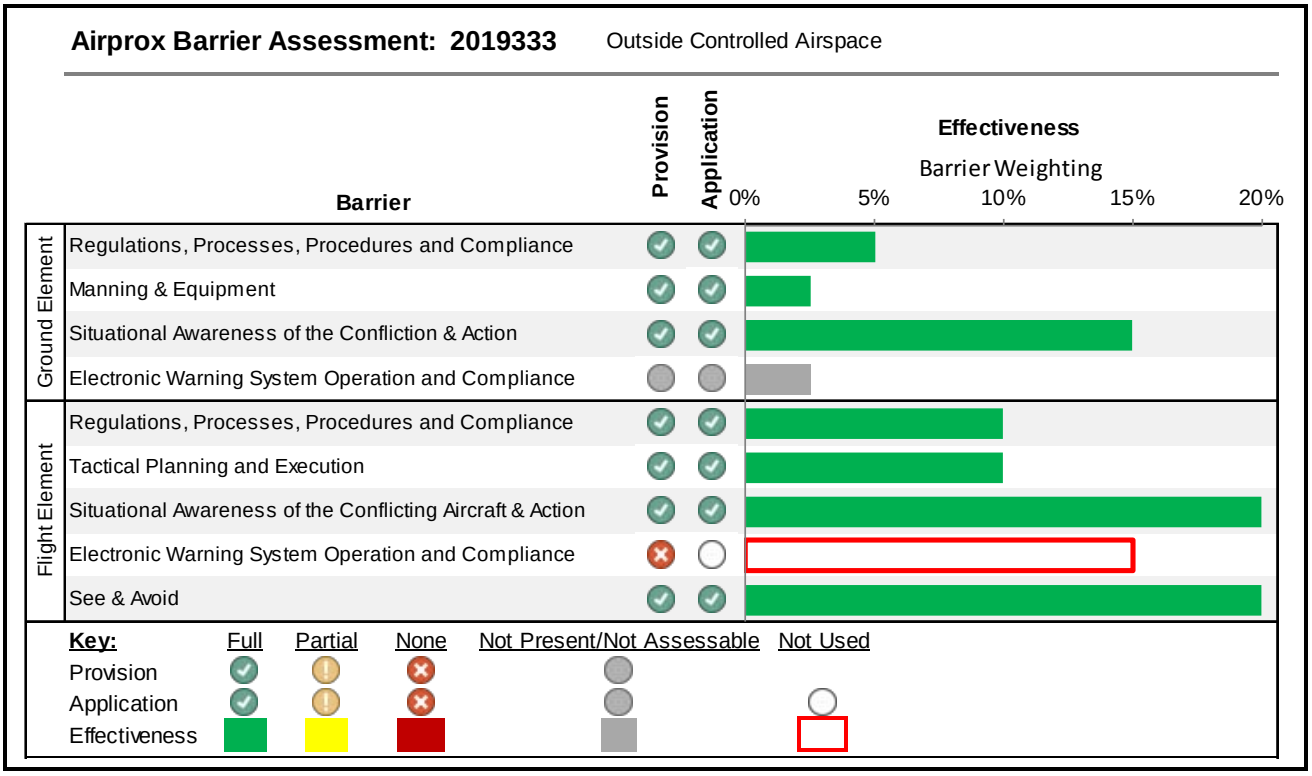
Degree of Risk: E

Safety Barrier Assessment[6]

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

Flight Elements:

Electronic Warning System Operation and Compliance were assessed as **not used** because, during AAR, the receiver aircraft pilots intentionally set their transponders to standby to prevent nuisance TCAS warnings from the tanker's TCAS II.



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