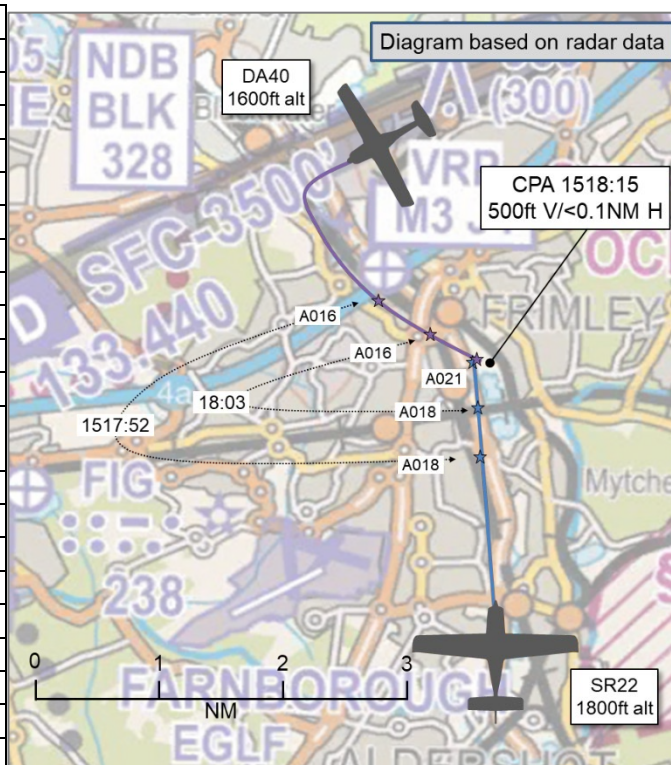


AIRPROX REPORT No 2021119

Date: 17 Jul 2021 Time: 1518Z Position: 5118N 00044W Location: Frimley

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	SR22	DA40
Operator	Civ FW	Civ FW
Airspace	Farnborough CTR	Farnborough CTR
Class	D	D
Rules	VFR	VFR
Service	Radar Control	Radar Control
Provider	Farnborough	Farnborough
Altitude/FL	2100ft	1600ft
Transponder	A, C	A, C, S
Reported		
Colours	White	White
Lighting	Landing, Nav, Strobe	'Standard fit'
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1800ft	1500ft
Altimeter	QNH (1027hPa)	QNH
Heading	355°	120°
Speed	120kt	135kt
ACAS/TAS	TAS	SkyEcho2
Alert	Information	None
Separation		
Reported	100-200ft V/0m H	300ft V/50m H
Recorded	500ft V/<0.1NM H	



THE SR22 PILOT reports that they were flying under Radar Control inside the Farnborough zone having been cleared from Tongham direct to the M3J4 VRP, not above 2000ft on QNH 1027. They advised Farnborough Radar they were at 1800ft and flew a straight path towards the M3 J4 with an approximate heading of 355°. At just before 1518Z they noticed another aircraft on their Cirrus traffic screen, approaching left to right at the same altitude. They initiated an immediate climb to avoid and passed overhead the other aircraft by approximately 100-200ft. They only saw the other aircraft physically after climbing rapidly to avoid, and later learned from the Blackbushe FISO that it was [DA40 C/S]. They raised the incident immediately to Farnborough Radar as a reportable near-miss and were extremely concerned that ATC had not provided avoidance information or instructions. They landed safely at Blackbushe a few minutes later but were very rattled personally by the incident. In subsequent telephone follow-ups, Blackbushe airport had been assisting with ADS-B traces but NATS Farnborough have refused to provide any further information (which the pilot felt was indicative of a cover-up)¹. They considered the incident to be primarily caused by errors by the Farnborough ATC controller(s): (1) directing two aircraft to the same position and altitude and (2) failing to provide avoidance action. It appeared the controller was under high workload/distracted as just prior to this incident, there was a jet go-round at Farnborough due to which they were asked to carry out an immediate right-hand orbit prior to reaching the Tongham waypoint. It appears the Farnborough zone arrangements are a safety problem due to large numbers of GA aircraft being directed through specific waypoints (e.g. Tongham, M3J4 VRP). Hopefully rapid changes can be made to avoid this type of incident in the future.

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

THE DA40 PILOT reports that they departed Blackbushe VFR tracking initially SE bound to avoid Yately for noise abatement, before proceeding towards M3J4 VRP. They were handed over to Farnborough

¹Farnborough ATC provided the UKAB with all the materials required for analysis, including full RT recordings.

Approach 133.440 as per their departure clearance and upon selecting the frequency noted it to be very busy. Once the controller had finished liaising with other traffic they asked whether they [the DA40 pilot] was on frequency, to which they replied that they were approaching overhead M3J4 VRP level at 1500ft and their current pressure setting (QNH as passed from Blackbushe Information before departure). They were then cleared to transit through Farnborough zone, not above altitude 2000ft VFR direct from M3J4 to Guildford and so took up heading direct to Guildford VRP remaining at 1500ft. During this conversation they conducted a left hand orbit north of the VRP. They recalled being passed 2 traffic calls which they believed to be pertaining to the traffic in question, along with notification that they were under Radar Control; although where exactly they received all of these calls they could not recall. Both traffic calls notified the traffic south of them, at range 1NM inbound to Blackbushe. They could not recall what, if any, altitude information was passed. On both occasions they scanned for the traffic in the 12-1 o' clock sector given their south-easterly track but could not identify the traffic. They also had SkyDemon connected to a SkyEcho2 electronic conspicuity device. This information was displayed via their phone mounted on a suction mount affixed to the canopy. They did not recall seeing this contact via these means either. They reported traffic not sighted on both occasions and were not overly concerned about a confliction. This was because the traffic was called south of them inbound to Blackbushe so they expected it to be level at 1600ft tracking NW bound away from them for an overhead join, as per their joining procedures; given Blackbushe was around 4NM west of their position at this time. Annotated on the SkyDemon log file (Figure 1) is their mental model of the traffic as called by Farnborough Radar. In retrospect they did not know what routing this aircraft had been approved for its transit across Farnborough Zone. They first sighted the traffic 12 o' clock range 0.5NM ahead climbing from underneath the nose directly towards them (almost no aspect) and it passed about 300ft above. They did not take any avoiding action because by the time they had reacted the traffic was diverging above and behind them, no additional separation would be gained by manoeuvring, and manoeuvring would take them away from their approved transit routing and cause them to loiter longer in the missed approach path for inbound Farnborough arrivals. The pilot noted that they believed ATC had provided all of the information their capacity permitted and to their knowledge met ATC's requirements given separation is not assured VFR-VFR in Class D airspace.

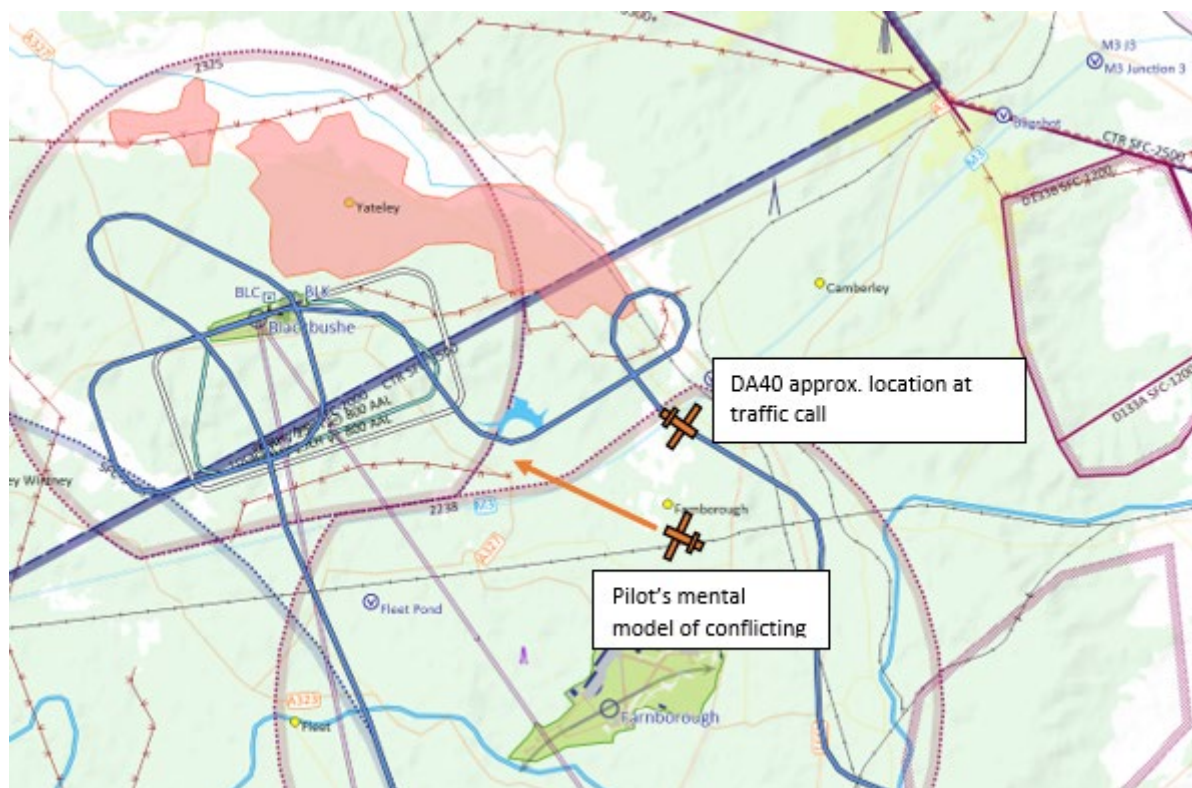


Figure 1

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

THE FARNBOROUGH LARS CONTROLLER reports that they were controlling with Farnborough LARS West and Zone bandboxed. It was a very busy day and the SR22 pilot called for a transit; the aircraft was eventually cleared to route from Tongham VRP to the M3J4 VRP inbound to Blackbushe. When [the SR22 C/S] was still inbound to M3J4 VRP, [DA40 C/S] called on frequency having been issued with a standard VFR clearance to the M3J4 VRP not above altitude 2000ft. The controller identified the aircraft and passed Traffic Information to both aircraft. As they got closer they updated the Traffic Information at least once more. [SR22 C/S] reported that they had been required to climb to avoid [DA40 C/S] and that they were probably going to report the incident. Due to the fact that they were almost at Blackbushe and because the frequency was busy, the controller asked them to report the incident when on the ground. Shortly afterwards a colleague took over the position and they were later informed that the pilot was submitting an Airprox.

Factual Background

The weather at Farnborough was recorded as follows:

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METAR EGLF 171450Z AUTO VRB08KT 9999 NCD 26/15 Q1027=
METAR EGLF 171520Z AUTO 07009KT 040V100 9999 NCD 27/14 Q1027=
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Analysis and Investigation

NATS Farnborough Investigation

[SR22 C/S] operating VFR in CTR1 reported an Airprox against VFR traffic [DA40 C/S] operating within CTR1. Both aircraft were under a Radar Control service. Both aircraft were given Traffic Information on the other.

LARS West and Zone (133.440) were operating split from Farnborough's Approach frequency. The Zone frequency had been busy but was tactically split in accordance with Farnborough procedures and was manageable. There were two zone crossers at the time of the incident with at least two other aircraft calling during the incident. The weather was CAVOK.

[DA40 C/S] was given a standard M3J4 VRP departure from Blackbushe, was airborne and was showing on the radar routing towards M3J4 VRP squawking 0463 with Mode C indicating 1500ft. [SR22 C/S] was a northbound Zone crosser not above 2000ft routing from the vicinity of Tongham towards M3J4 VRP squawking 0461 with Mode C showing 1800ft.



Figure 2: 1515z

The following calls took place:

1515:51 (RAD) "[SR22 C/S] radar control"

The SR22 entered the Farnborough CTR1 routing northbound in the vicinity of Tongham.

1516:02 - 1516:39 the controller was engaged with other aircraft.

1516:43(RAD)"[DA40 C/S] Farnborough radar are you on frequency?"

1516:45(DA40)"[C/S] affirm just reached M3J4 orbiting north of"

1516:49:(RAD)"[DA40 C/S] roger squawk ident report your level"

1516:54(DA40)"squawk ident 1500 feet on 1027 [C/S]"

1517:09(RAD)"[DA40 C/S] roger route from your current position direct Guildford caution traffic south by 2 miles northbound at 1800 feet EGLK [Blackbushe] inbound is an SR22"

1517:21(DA40)"traffic not in sight route present position to Guildford [C/S]"

1517:25(RAD)"[SR22 C/S] DA40 north of you by 2 miles at the M3J4 routing to Guildford 1600 feet"



Figure 3: 1517z

1517:35(SR22)"Affirm looking for traffic [C/S]"

1517:41(RAD)"[DA40 C/S] the um EGLK [Blackbushe] inbound traffic 1 mile south of you now 1800 feet"

1517:50(DA40)"Still not in sight [C/S]"



Figure 4: 1517:50z

1517:43(RAD)"[DA40 C/S] roger radar control"

1517:59 -1518:03 another aircraft called on frequency and was told to standby.

1518:08(SR22)"*unintelligible* [C/S]avoiding traffic had to climb *unintelligible* coming right for me"



Figure 5: 1518z

1518:08 [SR22 C/S] squawking 0461 and [DA40 C/S] squawking 0463 contacts merge Mode C indicated the SR22 200ft above DA40 at 1600ft and 1800ft respectively.

1518:13 0461 [SR22 C/S] Mode C indicated 2000ft.



Figure 6: 1518z

1518:13(DA40)"[C/S] now visual clear underneath below the SR22"

1518:21(RAD)"[SR22 C/S] roger"

1518:22(SR22)"[C/S] that was a near miss I think we should report that *unintelligible* air traffic zone"

1518:29(RAD)"[SR22 C/S] roger you had Traffic Information VFR versus VFR however if you need to file you can do it on the ground"

1518:37(SR22)"Affirm [C/S]"



Figure 7: 1518:30z

The SR22 continued into Blackbushe.

For this investigation the R/T and radar recordings were reviewed, MATS 1 and MATS 2 procedures both reviewed.

This event occurred because two aircraft operating VFR inside Farnborough's CTR1 met on reciprocal tracks both operating on a 'not above' clearance over a VRP towards the northern

boundary of CAS. The controller's Traffic Information given to the aircraft was lacking clarity where in one instance south was stated, the aircraft was in fact south-east.

According to MATS pt 1 Section 1: Chapter 2: Table 1: Classifications of Airspace Established in the UK FIRs VFR traffic in Class D airspace requires the ANSP to 'Pass Traffic Information to VFR flights on all other flights and provide traffic avoidance advice when requested'. Traffic Information was passed to both aircraft by the controller, no avoidance advice was requested. However, the Traffic Information which was given by the controller could have been more precise and updated as the situation evolved.

The aircraft were indicating 200ft apart on radar at the time of the event, which on this occasion, the controller didn't deem traffic avoidance advice necessary on VFR traffic under their own navigation, especially when Traffic Information, which they believed to be satisfactory, had been passed.

UKAB Secretariat

The SR22 and DA40 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.² If the incident geometry is considered as converging then the DA40 pilot was required to give way to the SR22.³ The rules for flight in Class D airspace are specified in the UK AIP, ENR 1.4, paragraph 2.4, reproduced in Figure 4 below:

2.4 Class D - Controlled Airspace

Service	IFR	VFR
	Air Traffic Control Service.	
Separation	Separation provided between all IFR flights by ATC. Traffic information provided on VFR flights and traffic avoidance advice on request.	ATC separation not provided. Traffic information provided on IFR flights and other VFR flights; traffic avoidance advice on request.
ATC Rules		Flight Plan required (See Note 1); ATC clearance required; Radio Communication required; ATC instructions are mandatory.
VMC Minima	Not applicable.	At and above FL 100: 8 KM flight visibility 1500 M horizontal and 1000 FT vertical distance from cloud. Below FL 100: 5 KM flight visibility 1500 M horizontal and 1000 FT vertical distance from cloud. Alternatively, during day only, at and below 3000 FT AMSL, or 1000 FT above terrain, whichever is the higher (See Note 2): a. For aircraft other than helicopters, flying at 140 KT IAS or less: 5 KM flight visibility Clear of cloud and with the surface in sight. b. For helicopters, flying at 140 KT IAS or less: 1500 M flight visibility Clear of cloud and with the surface in sight.
Speed Limitation	Below FL 100: 250 KT IAS; OR lower when published in procedures or instructed by ATC.	

Note 1: In certain circumstances, Flight Plan requirements may be satisfied by passing flight details on RTF (detailed at ENR 1.10).

Note 2: The VMC criteria stated in the table above for flight by day at and below 3000 FT AMSL, or 1000 FT above terrain, whichever is the higher, reflect changes from SERA.5001 Table S5-1, as enabled through the Aviation Safety (Amendment) Regulation 2021.

Figure 8 – extract from the UK AIP ENR 1.4.

Summary

An Airprox was reported when an SR22 and a DA40 flew into proximity at Frimley at 1518Z on Saturday 17th July 2021. Both pilots were operating under VFR in VMC, both were receiving a Radar Control Service from Farnborough LARS.

² (UK) SERA.3205 Proximity.

³ (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the air traffic controller involved. 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 discussed the actions of the SR22 pilot. They were VFR and routing through the Farnborough Class D CTR. On entry of the CTR the controller provided the pilot with a Radar Control service, and told the pilot to route towards the M3J4 VRP not above 2000ft. Members opined that it was a common misconception that a Radar Control service meant that VFR traffic would be separated from other VFR traffic, when in fact the controller had provided an altitude limit and routing only, and it was for the pilot to ensure that they remained clear of other traffic within the Class D airspace. Furthermore, some members thought that, anecdotally, in the UK GA pilots were discouraged from routing through Class D airspace, leading to some trepidation and misunderstanding about what their responsibilities actually were when flying through such airspace. Nevertheless, for pilots operating out of Blackbushe routing through the Farnborough CTR was a necessarily common occurrence and they felt that pilots should familiarise themselves with the Class D rules regarding their own responsibilities prior to flight (**CF3**). Having been told about the DA40 by ATC, including that it was at 1600ft, it was the responsibility of the pilot to provide their own separation. The SR22 pilot acknowledged the Traffic Information and members wondered whether at that stage they expected the other aircraft to be further deconflicted, certainly they became concerned when they saw the opposing traffic on their TAS with only 200ft separation despite being given that information previously (**CF5, CF6**). Concerned, the pilot took action by climbing, which the Board considered to be appropriate, but did not see the DA40 until they had passed overhead after the climb (**CF8**).

Turning to the DA40 pilot, they were aware that it was their responsibility for their own separation from other aircraft. Unfortunately, the Traffic Information given by the controller was not as accurate as it could have been (**CF4**), leading to the pilot having an incorrect mental model, in that they assumed the other aircraft would remain to the south as they were inbound to Blackbushe. The pilot also reported not receiving any information from their CWS (**CF7**) and so were further disadvantaged by not having an accurate position report on the SR22 from that source either. They reported seeing the other aircraft 0.5NM away and, seeing that the other aircraft was already in the climb, did not take any further action.

The Board then looked at the role of the Farnborough controller. Under the conditions for flight within Class D airspace, the controller was not responsible for the sequencing or separation of the VFR traffic, however they were required to provide Traffic Information to enable the pilots to provide their own separation. The Traffic Information provided to the SR22 pilot was accurate, but the Traffic Information given to the DA40 pilot was not as accurate as it could have been, leading to the pilot having an incorrect mental model of where the conflicting traffic was likely to be (**CF1**). Additionally, some controlling members noted that outside controlled airspace controllers are encouraged not to instruct pilots to fly directly to VRPs, and whilst VRPs were a useful way of ensuring pilots routed to a known position within controlled airspace, still they thought that having two aircraft routing to the same place in opposite directions at a similar altitude was not ideal and in such circumstances it was essential that Traffic Information was accurate. Nevertheless, the responsibilities of the controller were fulfilled in that they were required to pass Traffic Information, and did so. The STCA system at Farnborough is not optimised for alerting against VFR traffic below 2300ft and so did not provide the controller with a warning (**CF2**).

When assessing the risk of collision, the Board considered the reports of both pilots and the controller, together with the NATS investigation and the radar screenshots. Members agreed that there had been no risk of collision, with some members opining that this was normal operations within Class D airspace in that both pilots were VFR and required to maintain their own separation and the controller gave Traffic Information in order to enable them to do that. Furthermore, that after the SR22 pilot had taken the appropriate action there had been 500ft separation (Risk E). However, others countered that whilst all of the above was true, the inaccurate Traffic Information led the DA40 pilot to believe the SR22 would not be a factor, and the SR22 pilot believed that the controller would separate them from other traffic,

therefore safety had been degraded. In the end the latter view prevailed, and the Board agreed that although safety had been degraded, there had been no risk of collision, Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021119			
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
• Electronic Warning System Operation and Compliance				
2	Technical	• Conflict Alert System Failure	Conflict Alert System did not function as expected	The Conflict Alert system did not function or was not utilised in this situation
Flight Elements				
• Tactical Planning and Execution				
3	Human Factors	• Pre-flight briefing and flight preparation	An event involving incorrect, poor or insufficient pre-flight briefing	
• 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 or only generic, Situational Awareness
5	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
• Electronic Warning System Operation and Compliance				
6	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
7	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
• See and Avoid				
8	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C.

Safety Barrier Assessment⁴

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

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the controller passed inaccurate Traffic Information.

Electronic Warning System Operation and Compliance were assessed as **not used** because the STCA for Farnborough LARS West is not configured to be used below 2300ft on VFR squawks.

⁴ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the SR22 pilot expected to receive avoiding action advice, which the controller was not required to give in Class D airspace.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the inaccurate Traffic Information led the DA40 pilot to have an incorrect mental model on the position of the SR22 and the SR22 pilot interpreted the DA40 to be co-altitude from their TAS information.

Airprox Barrier Assessment: 2021119		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							