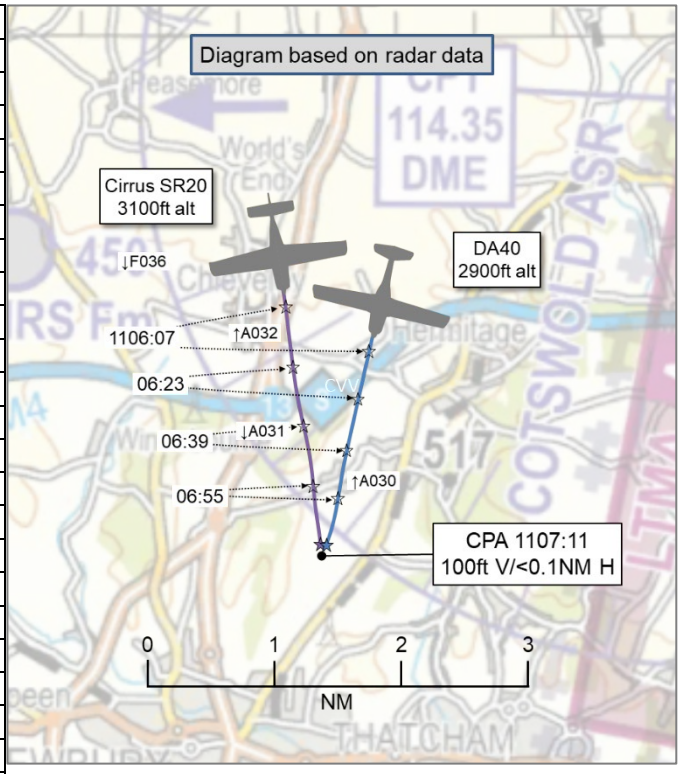
AIRPROX REPORT No 2020122

Date: 14 Sep 2020 Time: 1107Z Position: 5126N 00118W Location: 1.5NM NE of Newbury

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA40	Cirrus SR20
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	None[1]
Provider	Boscombe LARS	N/A
Altitude/FL	3000ft	3100ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White/blue	White
Lighting	Strobes, nav lights	Strobes
Conditions	VMC	VMC
Visibility	>30km	10km
Altitude/FL	2800ft	3000ft
Altimeter	RPS (1016hPa)	QNH
Heading	159°	170°
Speed	100kt	125kt
ACAS/TAS	Not fitted	TAS
Alert	N/A	TA
Separation		
Reported	75ft V/100m H	300ft V/500m H
Recorded	100ft V/<0.1NM H	



THE DA40 PILOT reports that the Cirrus SR20 was converging from approximately their 4-5 o'clock; it was faster and overtaking on their right-hand side. The aircraft was not spotted until they were informed by ATC "*aircraft right, same level half a mile converging*" or a call similar to that. Immediately on looking over their right shoulder they spotted the SR20 at a range of 150-200m. They briefly hesitated before commencing a descending left turn. In order to spot the aircraft, they were required to lean forward to clear the canopy structure from the far right of their view due to it approaching from the rear. This may have resulted in them missing the aircraft in a scan. The student in the left-hand seat of the aircraft had just set the Portland regional QNH which differed by 5hPa from the previous Oxford QNH. The instructor glanced over to check the new pressure setting had been set at the time the Traffic Information was passed.

With the position of the aircraft approaching from the rear on the right-hand side of the aircraft, their student in the left-hand seat would probably not have been able to see the aircraft due to the structure of the DA40. Their rear-seat student was also on the rear-left of the aircraft and, due to the structure of the DA40, they do not believe that they would have been able to see the aircraft either. The instructor personally did not sight the aircraft until informed by ATC. After spotting it, they do not feel that they would have hit on their current courses. However, they feel that it would have been very close and safety was degraded. They are not sure if the SR20 pilot spotted them or not. Their courses were slowly converging at a similar level.

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

[1] The NATS radar replay showed the squawk on the Cirrus SR20 changing from 7000 to a squawk assigned to Solent Radar approximately 40sec prior to CPA. It has not been possible to establish if the Cirrus SR20 pilot had agreed a Service with Solent Radar prior to the Airprox.

THE CIRRUS SR20 PILOT reports being in the cruise at 3000ft with the autopilot engaged, en-route to [their destination] with a passenger who is also a qualified pilot. They had previously been in contact with Brize Norton for a CTR crossing and were preparing to contact Solent Radar. They had watched an aeroplane on the MFD map (displayed by TAS) climb behind them and level off 100ft below and to their left, heading in the same direction. They had a TAS contact for some time prior to the TA. They visually acquired the conflicting DA40 traffic on their left and climbed to 3200ft to diverge from it whilst maintaining visual separation. They then watched the DA40 diverge on a south-easterly heading before turning right towards them again just to the north of Newbury [UKAB Note: the NATS radar replay showed this turn occurring at 1104:18]. They then monitored the DA40 visually until it became clear to them that the DA40 pilot had not seen them; they turned right to make their aeroplane more visible and ensure separation both laterally and vertically.

The pilot assessed the risk of collision as 'None'.

THE BOSCOMBE DOWN LARS CONTROLLER reports that a Diamond DA40 was transiting via Chilbolton on a Basic Service at 3000ft on 1022hPa. They made a traffic call believed to be them "*has traffic west half a mile tracking south indicating 100ft below*". The pilot responded by saying "*yes, visual with him*". A few moments later, the pilot said they would like to declare an Airprox against the track that passed them on their right-hand side that they believe was a Cirrus SR22. The controller asked the pilot to pass them all their details and they did. The DA40 pilot reported their speed as 100KTAS.

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

THE BOSCOMBE DOWN SUPERVISOR reports being in the ACR at the time. They did not witness the specific occurrence due to monitoring other Boscombe frequencies that were busy at the time. However, the zone controller grabbed their attention immediately after the event and they went over to monitor the frequency where they heard the pilot pass the controller all the details described in this report.

The zone controller went above and beyond the terms of service the aircraft was under (Basic Service) by issuing a proactive Traffic Information call to the pilot. By doing so, they assisted the pilot in getting visual with the other aircraft prior to the event. Following the event, the controller took all relevant details from the reporting pilot on frequency, was then relieved from position to file this report and the tapes were impounded.

Factual Background

The weather at Benson was recorded as follows:

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METAR EGUB 141050Z 13006KT CAVOK 24/13 Q1022 NOSIG RMK BLU BLU=
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Analysis and Investigation

Military ATM

The DA40 was transiting from via Chilbolton under a Basic Service with Boscombe Down Zone. In the lead up to the Airprox, the student pilot had requested a MATZ penetration and a Basic Service and was adjusting the altimeter setting. When the Traffic Information was passed, the instructor had been checking the new pressure setting, reporting that they only became visual following the Traffic Information given by ATC. They reported that they had to lean forward to see the SR20, as it was approaching from the rear and their view was obstructed by the canopy structure. The instructor believed that the student in the left-hand seat would probably not have been able to see the SR20 due to the structure of the DA40. Additionally, the instructor reported that they did not think that the rear seat student would have been able to see the SR20 either, as they were also sat on the left-hand side of the DA40. Estimated separation was 100m horizontally and 75ft vertically.

The SR20 pilot reported that they were not in in receipt of a service and were transiting in VMC. The pilot reported that they watched an aeroplane on their MFD map (displayed by TAS) climb behind

them and level-off 100ft below, to their left, heading in the same direction. As the conflicting aircraft accelerated, the SR20 pilot received a TAS Traffic Alert. They visually acquired the DA40 on their left at 1NM and climbed to diverge whilst maintaining visual separation. They then observed the DA40 diverge on a south-easterly heading before turning right towards them; at this point the SR20 pilot turned right to make their aircraft more visible and ensure lateral and vertical separation. Estimated separation was reported as 100ft vertically and 500m horizontally and they reported no risk of collision.

The Boscombe Down Zone controller was controlling three other aircraft as well as the DA40 at the time of the Airprox, one of which was under a Traffic Service with the others under a Basic Service. The controller initially gave a squawk and the regional pressure setting to the DA40 pilot before telling them to standby while they provided navigation assistance to another aircraft which was routing towards an active Danger Area. The controller then confirmed the squawk and regional pressure setting with the DA40 pilot and gave them clearance to penetrate the Middle Wallop MATZ. Traffic information was then passed to the DA40 pilot regarding the SR20 by the controller utilising the phrase "*Traffic believed to be you has traffic*….".

Figures 1-4 show the positions of the DA40 and the SR20 at relevant times in the lead-up to and during the Airprox. The screenshots are taken from a replay using the NATS radars, which are not utilised by Boscombe Down controllers and, therefore, may not be entirely representative of the picture available to the Boscombe Down controller.

Seven seconds prior to Figure 1, the DA40 pilot was given a squawk and regional pressure setting and told to standby. Separation was measured at 1.4NM and 300ft. In Figure 2, separation had reduced to 0.7NM and 300ft whilst navigation and Danger Area avoidance advice was provided to another aircraft. The DA40 pilot was requested to confirm the squawk and RPS and was given a MATZ penetration clearance.

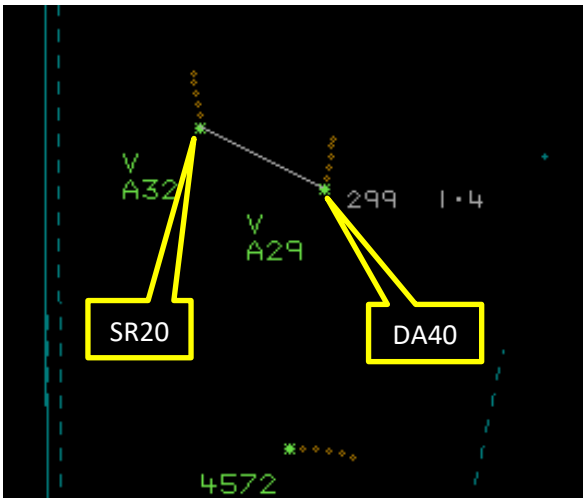


Figure 1

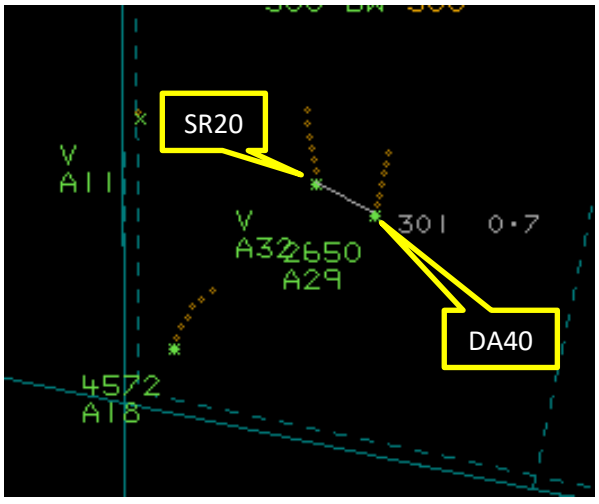


Figure 2

In Figure 3, Traffic Information was passed to the DA40 pilot. The SR20 squawk changes to a Solent Radar squawk. Separation had reduced to 0.2NM and 200ft. CPA is shown at Figure 4 and was measured at <0.1NM and 100ft (radar zoomed in to <3NM).

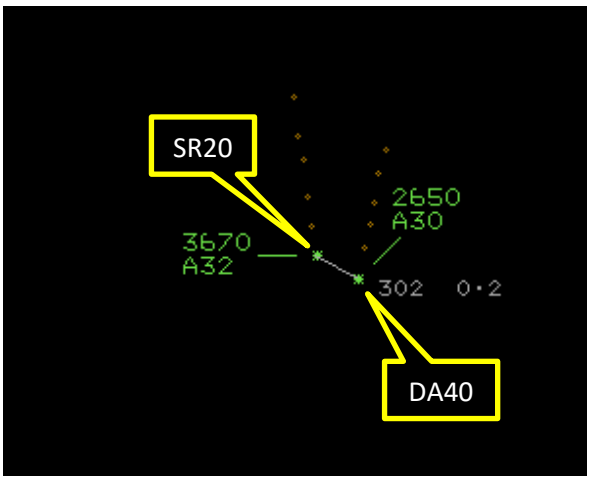


Figure 3

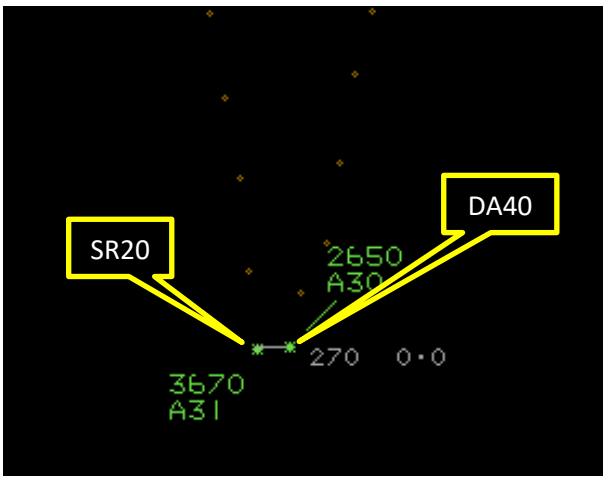


Figure 4 – CPA

The Boscombe Down controller was working fairly steadily in the lead-up to the Airprox, as identified by the RT tape transcript, with four aircraft under their control. In the 2 minutes prior to the Airprox, the controller was providing navigation advice to another aircraft to maintain clear of an active Danger Area, which is likely why the DA40 pilot was told to standby after their initial transmission. Once the Danger Area issue was resolved, the controller confirmed what squawk and regional pressure setting the DA40 pilot had, before passing a MATZ penetration clearance. During this time, the separation between the DA40 and the SR20 decreased as seen in Figures 2 and 3. Although Traffic Information was passed which allowed the DA40 pilot to become visual with the SR20, it could have been passed prior to the MATZ penetration clearance due to the separation and converging headings of the DA40 and SR20.

UKAB Secretariat

The DA40 and Cirrus SR20 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 Cirrus SR20.[3] If the incident geometry is considered as overtaking then the DA40 pilot had right of way and the Cirrus SR20 pilot was required to keep out of the way of the other aircraft by altering course to the right.[4]

Summary

An Airprox was reported when a DA40 and a Cirrus SR20 flew into proximity 1.5NM NE of Newbury at 1107Z on Monday 14th September 2020. Both pilots were operating under VFR in VMC, the DA40 pilot in receipt of a Basic Service from Boscombe Down LARS; the Cirrus SR20 pilot was not in receipt of an Air Traffic Service.

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.

[2] SERA.3205 Proximity.
[3] SERA.3210 Right-of-way (c)(2) Converging.
[4] SERA.3210 Right-of-way (c)(3) Overtaking.

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.

The Board first considered the actions of the DA40 pilot and was heartened by the fact that they had sought an Air Traffic Service from the Boscombe Down Controller. However, some members wondered if the pilot may have been better served by requesting a Traffic Service, as this may have led the controller to monitor their progress more closely and perhaps have passed Traffic Information on the Cirrus at an earlier stage. As it was, the controller passed the first Traffic Information to the DA40 pilot when the aircraft had only been separated by 0.2NM and 200ft (**CF6**) when the Cirrus was behind the DA40 and obscured by the aircraft's structure (**CF8**); this had led to a late sighting of the Cirrus by the DA40 pilot (**CF9**) whereupon they immediately manoeuvred to increase separation.

Turning to the actions of the Cirrus SR20 pilot, the Board wondered why they had not planned to seek an Air Traffic Service en-route to their destination (**CF4**, **CF5**), as they had recently been in contact with Brize Norton but were still some distance from the Solent Radar area of responsibility. Boscombe Down had been providing a Service to the DA40 pilot and the Board considered that, had the Cirrus pilot also contacted Boscombe Down, then this may at least have alerted the DA40 pilot to their presence in a similar area. As it was, the Cirrus pilot had tracked the DA40, both on their TAS and visually, and manoeuvred their aircraft vertically on receipt of a TAS alert some 3min prior to the reported Airprox (**CF7**). However, members felt that they could have perhaps done more to ensure either a lateral or a vertical separation greater than that that had been recorded (**CF10**).

The Board then considered the actions of the Boscombe Down controller. Having noted that the controller was not required to monitor the aircraft under the terms of a Basic Service, members felt that they had done well to pass any Traffic Information to the DA40 pilot, particularly considering that they had been providing navigational assistance to another aircraft in the moments leading up to the Airprox (**CF3**). The Board concluded that, quite understandably, this had led to a late detection of the conflict between the 2 aircraft (**CF1**) and also, therefore, to late Traffic Information being provided to the DA40 pilot (**CF2**). Members wondered whether or not the Solent Radar controller may have had an opportunity to intervene, as the transponder code on the Cirrus had been seen to change to a Solent Radar squawk some 30-40sec prior to CPA; the Board heard form an ATC advisor that it is standard practice at Solent Radar to assign a transponder code on initial contact but, if the aircraft is at or beyond the limits of their area of coverage – which had been the case here – a Service will not be agreed until the aircraft is closer to the airfield.

Finally, the Board considered the risk involved in this encounter. Members noted that the DA40 pilot had assessed the risk of collision as 'low' and the Cirrus pilot, having been visual with the DA40 throughout this encounter, had assessed there to be no risk of collision. That said, the radar separation had shown only 100ft of vertical separation and <0.1NM of horizontal separation at CPA. Whilst this might normally considered to be risk bearing, in this instance the Cirrus pilot had been in continuous visual contact with the DA40 and the closing speed of the 2 aircraft was in the order of 25kts. The Board concluded that, although safety had been degraded, the DA40 pilot had had sufficient time and awareness to take effective action to increase separation and remove any collision risk. Consequently, the Board assigned a risk category C to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020122		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Situational Awareness and Action		
1	Human Factors	• Conflict Detection - Detected Late	
2	Human Factors	• ANS Traffic Information Provision	TI not provided, inaccurate, inadequate, or late
3	Human Factors	• Distraction - Job Related	Controller engaged in other tasks

	Flight Elements		
	• Tactical Planning and Execution		
4	Human Factors	• Flight Planning and Preparation	
5	Human Factors	• Communications by Flight Crew with ANS	Pilot did not communicate with appropriate ATS provider
	• Situational Awareness of the Conflicting Aircraft and Action		
6	Contextual	• Situational Awareness and Sensory Events	Pilot had no, late or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance		
7	Contextual	• Other warning system operation	Warning from a system other than TCAS
	• See and Avoid		
8	Contextual	• Poor Visibility Encounter	One or both aircraft were obscured from the other
9	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots
10	Human Factors	• Lack of Individual Risk Perception	Pilot flew close enough to cause concern

Degree of Risk: C

Safety Barrier Assessment[5]

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 Boscombe Down controller was distracted by the aircraft requiring navigational assistance and did not notice – and therefore did not pass Traffic Information – until the aircraft were only separated by 0.2NM.

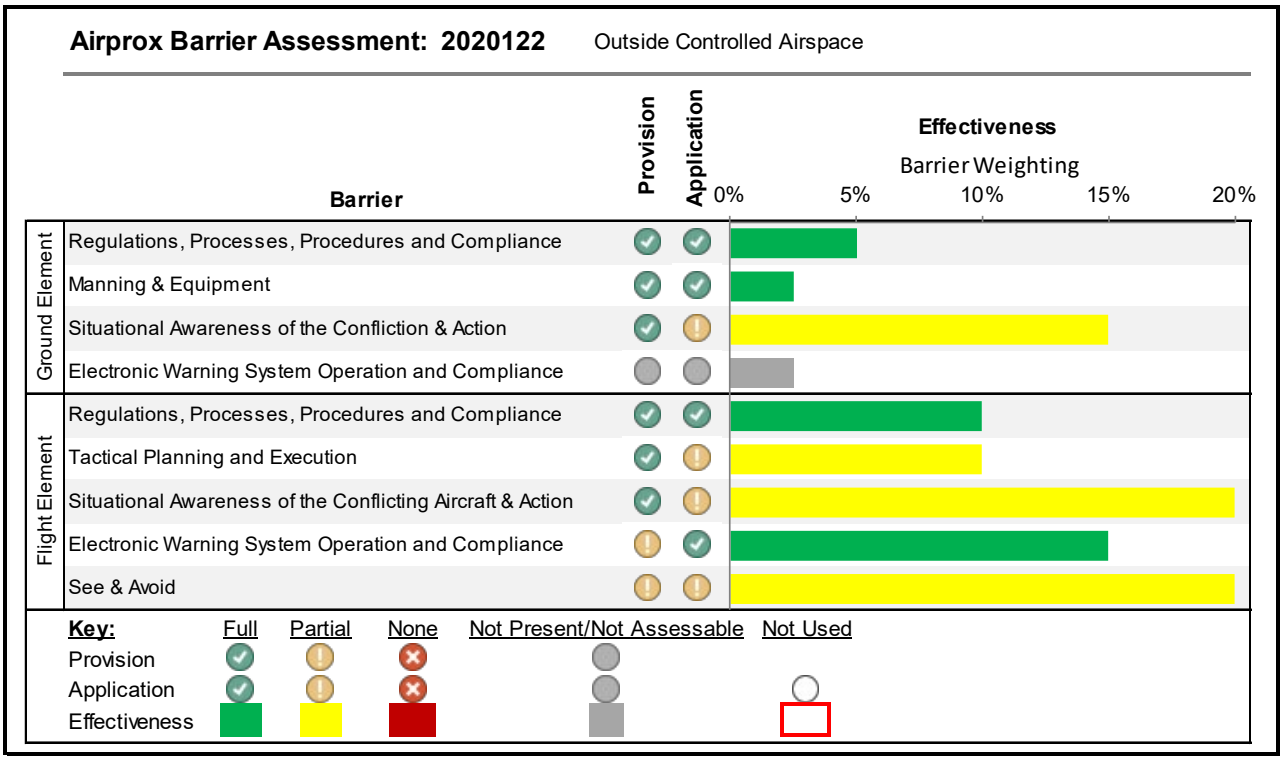
Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the SR20 pilot had not planned to seek an Air Traffic Service whilst en-route to their destination.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the DA40 pilot received late Traffic Information from the Boscombe Down controller.

See and Avoid were assessed as **partially effective** because the DA40 pilot did not see the approaching SR20 until passed Traffic Information by the Boscombe Down controller when the aircraft were only separated by 0.2NM, and the SR20 pilot did not allow enough vertical and/or lateral separation from the DA40.

[5] 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: 2020122
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