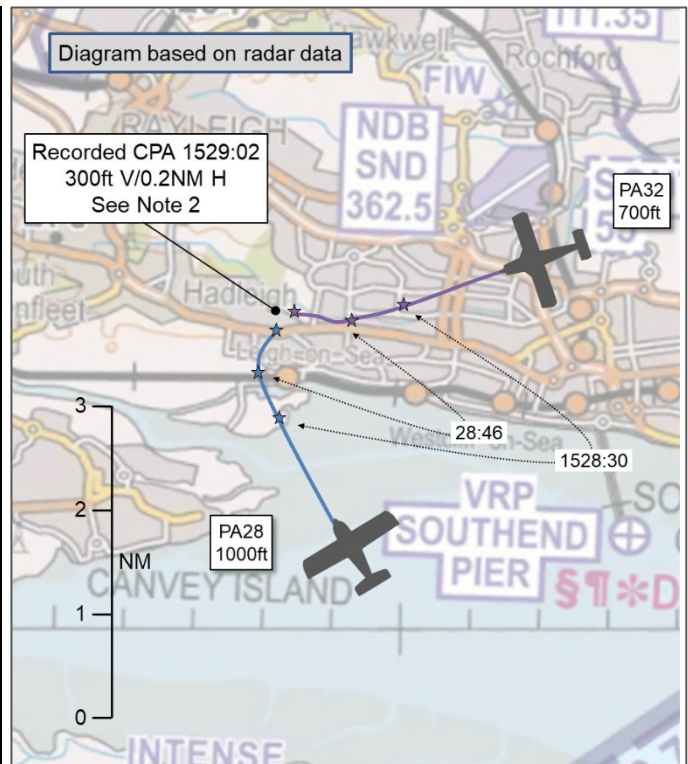


AIRPROX REPORT No 2022056

Date: 08 Mar 2022 Time: 1529Z Position: 5132N 00038E Location: Southend

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	PA32
Operator	Civ FW	Civ FW
Airspace	Southend CTR	Southend CTR
Class	D	D
Rules	VFR	VFR
Service	ACS	ACS ¹
Provider	Southend	Southend
Altitude/FL	1000ft	700ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White, Blue	Blue, White
Lighting	Beacon, Nav	Nav, Beacon
Conditions	VMC	VMC
Visibility	>10km	5-10km
Altitude/FL	1000ft	1000ft
Altimeter	QNH	QNH
Heading	Turning to 050°	NK
Speed	80kt	100kt
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	'minimal' V/1NM H	Not Seen
Recorded	300ft ² V/0.2NM H	



THE SOUTHEND TWR CONTROLLER reports that the PA32 pilot was instructed to join and report beginning of downwind leg right-hand for RW05. There was some pilot confusion over whether to join downwind left and they were re-instructed to join downwind right-hand. The pilot was then instructed to continue downwind. The controller observed [PA32 C/S] to be flying quite close to final approach and was given information on traffic on a 1NM final to land. The controller had not noticed [PA32 C/S] continuing towards final approach and only noticed when they were in direct conflict with No2 aircraft to land [PA28 C/S] and told to head south immediately. The pilot seemed confused and continued in the wrong direction to final approach and passed over the top of [PA28 C/S] on final approach, indicating on the ATM 300ft above. Essential Traffic Information was passed to [PA28 C/S] then [PA32 C/S] stated they were visual with the aircraft below. [PA32 C/S] was then instructed to report final and still drifted out to around 6NM west of the airfield. The controller informed the pilot of their location and they then turned east and appeared to be heading towards final approach. The controller had no further concern after period of observation of the track to final. [PA32 C/S] was cleared to land and controller handed over position. Additionally the TWR controller stated: 'I had no ATCA support for about 15 minutes during a busy spell of traffic, and when I did, I had a lot of questions/requests from the ATCA so felt distracted. I had also just come out of a meeting which wasn't the most positive, and traffic had been suppressed for the duration of the meeting (about 90mins on the planner I think) on a good weather day so when I sat back in there was quite a build-up of traffic waiting'.

THE PA28 PILOT reports they were doing circuits on RW05 at Southend. They had extended the (RH) downwind leg to about 2.25NM as instructed by ATC and turned onto base at the coast. As they turned base to final they noticed an aircraft cutting across their final approach track from right to left at about the same altitude, approximately halfway between them and the threshold. By the time their wings were

¹ Pilot reported receiving a Radar Control Service

² Radar recorded separation indicated 300ft vertical separation, however Southend's investigation found that the Mode C on AC1 was aircraft was 100ft higher than the pilot reported and the Mode C on the PA32 was 200ft lower than the pilot reported, consequently actual separation was likely to be much closer than the radar would indicate.

level the other aircraft had flown through the final approach track and was clear to the west. They carried on with the touch-and-go as planned.

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

THE PA32 PILOT reports that they approached Southend Airport on an approximate track of 355° and carried out one left-hand orbit over the Thames, reported abeam the pier and were instructed to "report downwind R/H for 05, Radar Control". They reported "late downwind" and were informed of other aircraft on final and told to continue downwind. At this stage they were at 1000ft and had been expecting to turn onto base in a mile or so, they held off changing course while looking for the PA28 on final but did not see the other aircraft. They then received instruction to continue west until advised, they climbed back up to 2000ft, the next instruction was to turn around and report final. They were then informed that their present position was 5 miles out. They were informed of the Airprox report a few days later and have tried to remember the detail as best they could.

Factual Background

The weather at Southend was recorded as follows:

METAR EGMC 081520Z 11010KT 090V150 CAVOK 09/01 Q1015=

Analysis and Investigation

Southend Investigation

Transponder – Mode C verification notes:

1502. [DA42 C/S] on first contact with Southend Radar reported at 2300ft and Mode C indicating 2.3

1508. [PA28 C/S] on first contact with Southend Radar reported at 2000ft and Mode C indicating 2.1. (Over reading by 100ft)

1517. [PA32 C/S] on first contact with Southend Radar reported at 2000ft and Mode C indicating 1.8 (Under reading by 200ft)

Timeline (filtered for relevant calls).

1522. Radar (RAD) co-ordinated with Tower (TWR) for [PA32 C/S] #5053 to join to hold at the Pier (VRP).

1525. RAD transferred [PA32 C/S] to TWR approx 4NM south of aerodrome.

1525.40 [PA32 C/S] contacted TWR and was instructed: "[PA32 C/S] report, correction, join and report at the beginning of the downwind leg right hand RW05" (Figure 1).



Figure 1

PA32: "report downwind leg for 015 [C/S]" then shortly after pilot said "[C/S] was that left-hand circuit 015, 05"
 TWR: "[PA32 C/S] join and report right hand downwind RW05"
 PA32: "report right hand downwind [C/S]"
 1526.14 TWR: "[PA28 C/S] report final, just becoming number 2, following a DA42 on a 4 mile final"
 PA28: "report final number 2, [C/S]"
 1526.26 [PA28]: "I can't see the one in front are we clear to turn base?"
 TWR: "[PA28 C/S], Negative, you are abeam a one mile final, traffic is now 3 mile final so continue downwind"
 PA28: "Continue downwind [C/S]"
 TWR: "[DA42 C/S] after this touch and go you can resume your left hand circuit" (previous CCT was right hand).
 DA42: "[C/S] roger, we would like a right hand turn and then to leave CAS via Sheerness please"
 TWR: "[DA42 C/S] roger, after the touch and go cleared to leave CAS on track Sheerness not above 1500 ft" This was read back correctly by pilot.
 1527.36 TWR: "[PA28 C/S] you can turn base when you are ready"
 PA28: "[C/S] roger"
 PA32: "[C/S] late downwind"
 1527.53: "[PA32 C/S] roger continue downwind and you are very close to final approach, traffic on a 1 mile final is a DA42". (Figure 2)



Figure 2

PA32: "Copy the traffic continue downwind [C/S]"
 TWR: "[DA42 C/S], surface wind 13011KT, RWY05 cleared touch and go"
 1528.10. TWR pre-noted [DA42 C/S]'s departure with RAD.
 [PA32 C/S] passed just south of DA42 opposite direction. (Figure 3).



Figure 3

1528.35. TWR: "[PA32 C/S] turn southbound immediately you're on final approach".
 [PA32 C/S] indicating A08 passed 1.5NM final opposite direction to [PA28 C/S] indicating A11.
 (Figure 4)



Figure 4

PA32: "turn southbound immediately [C/S]"
 1528.42. TWR: "[PA28 C/S] there is traffic 1 mile east of you at 800ft, he should be downwind right hand"
 PA28: "[C/S]"
 PA32: "Can you repeat instructions for [PA32 C/S]"
 1529.46 [PA32 C/S] indicating A08 passing 1.75NM final opposite direction to [PA28 C/S] indicating A11. (Fig 5).



Figure 5

1529.01. TWR: "[PA32 C/S] essential traffic 1/2 mile west of you at 11 hundred feet".
 [PA32 C/S] indicating A08, [PA28 C/S] indicating A11 merge on a 2NM final (Figure 6).



Figure 6

PA32: "Seen it, [C/S]"

PA28: "[C/S] we are on final now"

TWR: "[PA28 C/S] continue approach"

PA28: "Continue approach [C/S]"

TWR: "[PA32 C/S] you were instructed to continue downwind, you've just crossed final approach"

PA32: "Continue downwind [C/S]"

TWR: "[PA28 C/S], surface wind 13009KT, RW05 cleared touch and go"

1529.38. TWR: "[PA32 C/S] turn final when you are ready"

PA32: "Turn final when ready [C/S]"

1530.00 RAD co-ordinate with TWR, [DA40 C/S] A7766 10 mile range check on vectored ILS RW05.

TWR reply to RAD: "I have no idea of what the 5053 is really doing, just be careful, I'll let you know if he goes weird again".

1530.19 [PA32 C/S] approx 4.5NM west of the airfield starting a right turn. Figure 8.



Figure 8

1530.48 [PA32 C/S] 5NM west of airfield indicating A15.

1531.07. TWR: "[PA32 C/S] your current position is now 4 miles west of the airfield, report final"

PA32: "Report final [C/S]"

1531.39 [PA32 C/S] 3NM west of airfield indicating A17 tracking eastbound. (Figure 9).



Figure 9

1534.15 [PA32 C/S] carried out a missed approach (pilot initiated) and subsequently completed a left-hand circuit and normal approach and landed at 1541.

Investigation Analysis.

The TWR position had been busy and traffic was complex in the time preceding the incident. There had multiple aircraft in the circuit, both left and right hand, and late notice of a Learjet inbound on a straight-in approach. The TWR controller had dealt with this very well and managed the traffic appropriately taking positive control when necessary.

The pilot of [PA32 C/S] did not sound confident throughout their entire flight from the time they made 2 way comms with Southend Radar. The pilot initially appeared to be joining the circuit in a normal manner. However, it did become apparent quite soon that [PA32 C/S] was positioned close to airfield and flying on a converging track towards the DA42 on final approach (Fig 2). The TWR controller advised the pilot of [PA32 C/S] of this but could have provided more positive instructions (ie turn left

to widen the circuit, position back towards the Pier etc) or to ask pilot of [PA32 C/S] if they had the DA42 in sight. No Traffic Information was passed to [PA28 C/S] on [PA32 C/S].

[PA32 C/S] (indicating A08) passed approx 0.5NM south of [DA42 C/S] (indicating A04) in an opposite direction on a 1NM final RW05. (Fig 3). Based on initial Mode C verifications the aircraft were likely to have been approx 600ft apart.

It was about this time that the TWR controller got distracted with a conversation with the ATCA about the VCR blinds. The TWR controller then noticed how close [PA32 C/S] was to final approach and converging with [PA28 C/S]. (Fig 4). At this stage [PA32 C/S] had not been given their landing order or specific Traffic Information on [PA28 C/S]. Based on relative positions it would have been appropriate to have passed this information. The TWR controller told [PA32 C/S] that they were on final approach and instructed [PA32 C/S] to turn southbound immediately. The term "avoiding action" would also have been appropriate but was not used. Traffic Information was passed to [PA28 C/S] about [PA32 C/S] ("*1NM east of you at 800ft*"). (Fig 5). Despite reading back the instruction to turn southbound, [PA32 C/S] did not follow the instructions and then asked for them to be repeated. [PA32 C/S] was given Traffic Information about the PA28 ("*[PA32 C/S] essential traffic 1/2 mile west of you at 11 hundred feet*"). This resulted in [PA32 C/S] continuing on their track and flying through final approach in front of [PA28 C/S] in close proximity. [PA32 C/S] was indicating A08 and [PA28 C/S] indicating A11. (Fig 6). The pilot of [PA32 C/S] said they had traffic in sight. Again, based on initial Mode C verifications the aircraft were both likely to have been at the same (similar) level of 1000ft as [PA32 C/S] Mode C was under reading by 200 ft and [PA28 C/S] Mode C was over reading by 100ft. It is not known if the pilot of [PA28 C/S] ever visually acquired the PA32.

[PA32 C/S] continued on the westerly track and continued 'downwind'. When [PA32 C/S] was approx 3NM west of the airfield they were told to turn final when ready (Fig 7). Radar then co-ordinated a further inbound ([C/S redacted] 10NM range check on ILS approach) with TWR. TWR advised the radar controller "*I have no idea of what the 5053 is really doing, just be careful, I'll let you know if he goes weird again*". At this stage no positive control or plan had been formulated to ensure that [PA32 C/S] would not conflict with the ILS traffic. [PA32 C/S] subsequently made a right turn back to the airfield approx 5NM west indicating A13. (Fig 8)

TWR then advised: "*[PA32 C/S] your current position is now 4 miles west of the airfield, report final*". [PA32 C/S] then positioned towards a right base and at 3NM west indicating A17 on Mode C (Fig 9). [PA32 C/S] was cleared to land whilst on right base approx 1.2NM from the airfield indicating A07. The pilot subsequently initiated a missed approach and continued for a left-hand circuit and landed without incident.

The TWR controller mentioned that they had attended a meeting prior to the incident. It should be noted that they had worked 90 minutes (1200-1330 UTC) in ADC immediately prior to the meeting and then sat back in ADC immediately after the meeting (1500-1535 UTC). Whilst staff were encouraged to attend the meeting, ultimately it was the controller's responsibility to ensure they were suitably rested and fit before taking over the operational position. There was an option to take a 30 minute break prior to sitting back in the ADC position.

Summary and contributing factors

The pilot of [PA32 C/S] did not position appropriately to join the circuit downwind right-hand and placed their aircraft into conflict with two aircraft on final approach. It is not known whether the pilot had lost sight of or did not acquire the airfield and thus impacted on situation awareness. Based on flying through final approach, then the subsequent routing the pilot flew to reposition back onto final with a right turn would suggest either they misjudged their position and turns, (possibly due to the SE'LY winds) or had lost sight of or did not see the airfield. Again, based on the time of day, position of the sun and the pilot flying westbound, this could have been a distraction and a contributory factor and may have prevented earlier sighting of the conflicting traffic on final. Their RT was not of a high standard throughout and this may also have been a factor.

After [PA32 C/S] had come into close conflict with one aircraft (DA42) on final approach, the TWR controller should have afforded more attention and priority to monitoring the situation and assisting in resolving the very obvious subsequent conflict with the PA28 that was just about to turn final from right base. Passing the pilot of [PA32 C/S] their landing order and Traffic Information at an earlier stage may have given them better situation awareness. The distraction of the interaction with the ATCA obviously did not help, but this should have not prevented the TWR controller from carrying out the prime tasks of controlling the traffic in the circuit. Whilst an attempt was made to resolve the situation the late actions and instructions to turn [PA32 C/S] south were highly likely not been enough to resolve the situation even if the pilot had complied with this instruction. TWR passed the level information of the conflicting aircraft as actual levels when Mode C indications were at variance with this. Whilst the TWR controller would not be expected to know what those variances are when Mode C readings are within tolerance of 200ft it can lead to a possible misleading picture of the situation. For this reason, the term 'indicated' should be used. However, in these types of urgent situations it is something that a controller could understandably omit and also does not mean a pilot will necessary process this variance if the term 'indicated' was used.

Conclusion

The TWR controller could have potentially helped resolve the situation at an earlier stage by passing the landing order and Traffic Information to the pilot of [PA32 C/S] about [PA28 C/S] along with closer monitoring and earlier avoiding action but ultimately the pilot of [PA32 C/S] did not position appropriately into the circuit which placed their aircraft downwind into conflict with aircraft on final approach.

UKAB Secretariat

The PA28 and PA32 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 An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.⁴

Summary

An Airprox was reported when a PA28 and a PA32 flew into proximity at Southend at 1529Z on Tuesday 8th March 2022. Both pilots were operating under VFR in VMC, both were in receipt of an ACS from Southend.

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 discussed the actions of the PA32 pilot. The pilot had been told by ATC to join downwind RW05RH, but they seemed confused in the readback, asking "*was that left-hand circuit 015, 05?*" although the controller corrected this clearly stating RW05RH, members still wondered whether the PA32 pilot was joining for the incorrect runway. Members with Southend experience noted that Southend did not often use RW05, due to the prevailing wind, RW23 was more often in use, so the pilot may not have flown a downwind join to this runway for some time. They also noted that Southend used to operate with RW15, but that this was taken out of use some years ago. However, if the pilot were joining for RW15, this would go some way to explain the unusual joining profile and explain why the pilot seemed confused as to where they were when the controller was updating position reports of the other circuit traffic. Whether joining for the incorrect runway, or simply confused by the joining clearance, the controller had clearly stated the runway in use and the joining instructions, which the pilot did not

³ (UK) SERA.3205 Proximity.

⁴ (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

comply with (CF4, CF6). Routing so close to the airfield and not following the correct circuit track, resulted in the pilot crossing the approach lane and not conforming with the pattern of traffic already in the circuit (CF5, CF7). The controller warned the PA32 pilot that they were very close to the DA42 on final, but the pilot did not appear to assimilate the information. Indeed, when the controller instructed the pilot to turn onto south to keep clear of the PA28, the pilot read back the instructions, then asked for them to be repeated, but did not actually take the turn (CF8), leading the Board to opine that the pilot probably had not assimilated either their own position, or that of the PA28, or both (CF9, CF10). Members commented that the pilot's situational awareness in general appeared poor, they did not appear to be looking at the runway for positioning, nor looking out for the other circuit traffic, and even after they had flown through the approach lane, they seemed confused by their position when out to the west of the airfield. They urged pilots who found themselves in this situation to request assistance from ATC, or to leave the circuit and re-join, rather than continue without being visual with the circuit traffic.

When looking at the actions of the PA28 pilot, members agreed that there was little more they could have done in the circumstances. They were flying the circuit correctly and had made all the appropriate RT calls. They acknowledged the Traffic Information from the controller and saw the PA32 crossing ahead; fortunately it was crossing far enough ahead that they did not need to take any avoiding action.

Finally, the Board discussed the actions of Southend ATC. The controller reported that they had come onto console following a meeting and had not had a break. Although the unit investigation had reported that there had been provision for the controller to take a break if required, still members thought that there had been a lack of supervision by scheduling a meeting during core working hours and then allowing the controller to return without a break (CF1). The controller reported being somewhat distracted by the events during the meeting and then by questions from the oncoming ATCA (CF3). Consequently, when the pilot did not comply with the controller's instructions to join downwind, the controller did not immediately notice the unusual positioning (CF2). Controlling members thought that the controller should have taken charge of the situation, not allowed themselves to be distracted and issued positive instructions to the PA32 pilot earlier. Once they had realised that the PA32 pilot was flying a non-standard circuit and flying towards aircraft on final, they provided Traffic Information to all of the pilots, including the DA42 on short final, and gave the PA32 pilot a turn away. Although the controller had not used the words 'avoiding action' with the instruction to turn, given that the PA32 pilot read back the instruction, but did not follow it, members thought that it probably made little difference on this occasion and was not a contributory factor.

When assessing the risk, the Board considered the reports from both pilots and the controller together with the radar replay and the unit investigation. Although the radar indicated that there had been 300ft separation, the Southend investigation had found that discrepancies in the aircrafts' Mode C readout, whilst still within radar tolerances, meant that the two aircraft were likely to be at a similar height at CPA. Nevertheless, the PA28 pilot reported that they had not needed to take avoiding action and whilst the PA32 pilot indicated on their report that they had not seen the PA28, in fact at the time, the pilot reported visual with it on the RT. The Board therefore concluded 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:

	2022056			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	Ground Elements			
	• Manning and Equipment			
1	Human Factors	• ATM Leadership and Supervision	An event related to the leadership and supervision of ATM activities.	
	• Situational Awareness and Action			
2	Human Factors	• Conflict Resolution-Inadequate	An event involving the inadequate provision of conflict resolution	

3	Human Factors	• Task Monitoring	Events involving an individual or a crew/ team not appropriately monitoring their performance of a task	
Flight Elements				
• Regulations, Processes, Procedures and Compliance				
4	Human Factors	• Flight Crew ATC Clearance Deviation	An event involving a deviation from an air traffic control clearance.	
5	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
• Tactical Planning and Execution				
6	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
7	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
• Situational Awareness of the Conflicting Aircraft and Action				
8	Human Factors	• Flight crew response to communications	An event related to the flight crew taking the incorrect action following communication	
9	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
10	Human Factors	• Understanding/Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information

Degree of Risk: C.

Safety Barrier Assessment⁵

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

Ground Elements:

Manning and Equipment were assessed as **partially effective** because the staff meeting was scheduled during normal working hours without sufficient provision to mitigate the traffic levels post-meeting.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the controller did not immediately realise the PA32 pilot was not following instructions or joining the circuit correctly, possibly due to being distracted by the ATCA.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the PA32 pilot did not comply with ATC instructions to join the RW05RH visual circuit.

Tactical Planning and Execution was assessed as **ineffective** because the PA32 pilot performed an incorrect join and did not conform with the pattern of traffic already in the visual circuit.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the PA32 pilot did not join as instructed and then did not assimilate the instructions or Traffic Information given by the controller.

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: 2022056		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 Conflicion & 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	■	■	■	■		□		