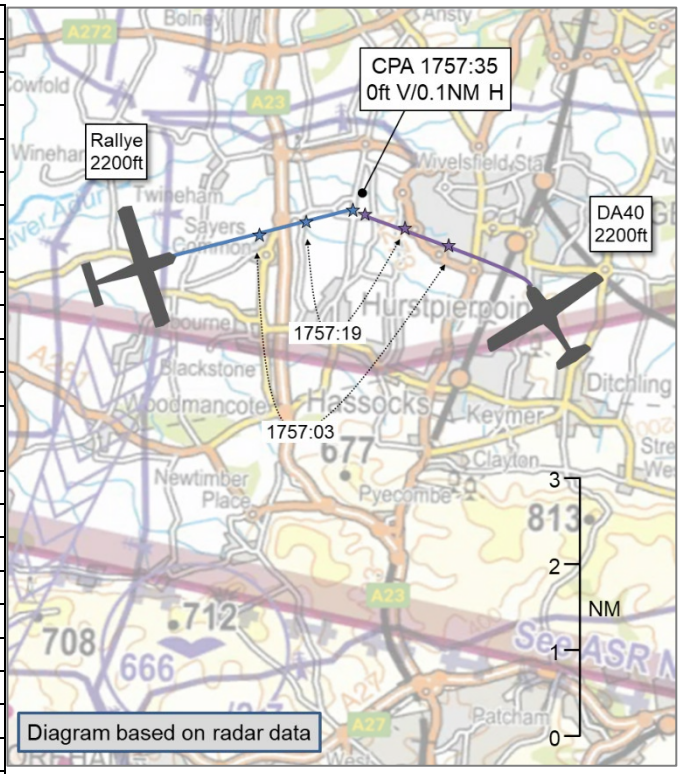
AIRPROX REPORT No 2021182

Date: 16 Sep 2021 Time: 1757Z Position: 5057N 00010W Location: 1NM W Burgess Hill

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA40	Rallye
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	None
Provider	Shoreham	
Altitude/FL	2200ft	2200ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White	White
Lighting	Strobe, Position, Landing	Nav, Strobes, Beacon
Conditions	VMC	VMC
Visibility	5-10km	NR
Altitude/FL	2200ft	2000ft
Altimeter	QNH (1017hPa)	NK
Heading	285°	NR
Speed	105kt	NR
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	0ft V/0.1NM H	50ft V/25m H
Recorded	0ft V/0.1NM H	



THE DA40 PILOT reports that they were completing an instrument training flight with a student pilot receiving a Procedural Service from Shoreham Approach and flying the RNP20 to land. At approx 1754Z, Shoreham Approach advised of an 'unofficial traffic' observation detected on FR24, an oncoming aircraft indicating a similar level and converging track from the west. As they continued the approach, Shoreham further provided guidance, stating the aircraft was 'approx 1NM, very close now'. Whilst looking for it, the aircraft appeared as it crossed through the sun and was very close at the same level. They assessed the distance to be 0.1NM maximum, passing in front towards their right wing. Avoidance action was taken to the left, with no observed change in altitude, course or speed from the oncoming aircraft. The other aircraft was not speaking to Shoreham. The inflight conditions for the approach were an IMC scattered layer below an inversion under them, with poor visibility in haze. They noted that had Shoreham ATC not provided this unofficial observation they did not think they would have seen the aircraft (as they would have been looking directly into the sun) and taken appropriate action to avoid. They therefore assessed the risk of collision as being high.

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

THE Rallye PILOT reports they were on route back to home base after picking up some passengers and following a pre-planned route avoiding airspace restrictions. They believed the other aircraft was hidden behind the windscreen framing as they did not have visual contact prior to the other aircraft already taking avoiding action. The other aircraft appeared to be climbing steeply. The other aircraft had already banked into a left turn away from them when sighted, so they also carried out a left turn to reduce collision risk further. Following the other aircraft passing on their starboard side they continued on route, maintaining a good scan.

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

THE SHOREHAM CONTROLLER reports that whilst on shift as an APP controller, working DA40 on an RNP approach, they noticed an aircraft [Rallye C/S] on ADS-B exchange at the same level as their traffic but not speaking to them and squawking 7000. They called the traffic to [DA40 C/S] 3 times as they considered that there was a serious risk of collision. The pilot of [DA40 C/S] noticed the aircraft very late and thanked the controller for the information as they also thought, without the Traffic Information, the chance of collision was high. They noted that although ADS-B exchange should not be used for Traffic Information during a Procedural Service, had they not used it, there would have been a high chance of collision.

Factual Background

The weather at Shoreham was recorded as follows:

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METAR EGKA 161750Z 22011KT 9999 FEW009 17/15 Q1017=
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Analysis and Investigation

CAA ATSI

ATSI had access to reports from both pilots, a unit investigation report from Shoreham ATC, the area radar recordings, and an RTF recording from Shoreham Approach.

The pilot of the DA40 was conducting an instrument training flight with a student pilot, flying the RNP20 approach at Shoreham in receipt of a Procedural Service from Shoreham. The pilot of the Rallye reported that they were flying passengers back to their "home base" and not in communication with anyone.

At **1752:18** the pilot of the DA40 reported being at 2200ft. The Shoreham Approach controller acknowledged this, cleared them for the RNP approach and requested they call passing "NITEN" which is one of the Initial Approach Fixes for that approach (Figure 1).

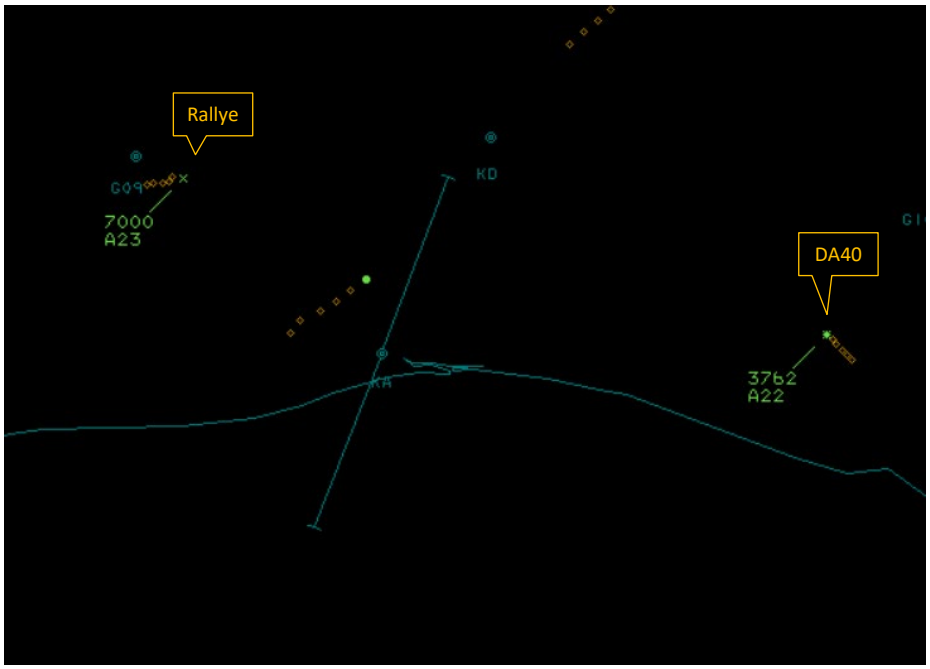

Figure 1 – 1752:18

At **1756:28** the Shoreham controller called the pilot of the DA40;

"I've got some kind of unofficial traffic information for you. On the FR24 here I've got traffic er five miles er to the west of you, similar level crossing you left to right." The pilot replied: *"roger – we'll keep a good look-out"* (Figure 2).

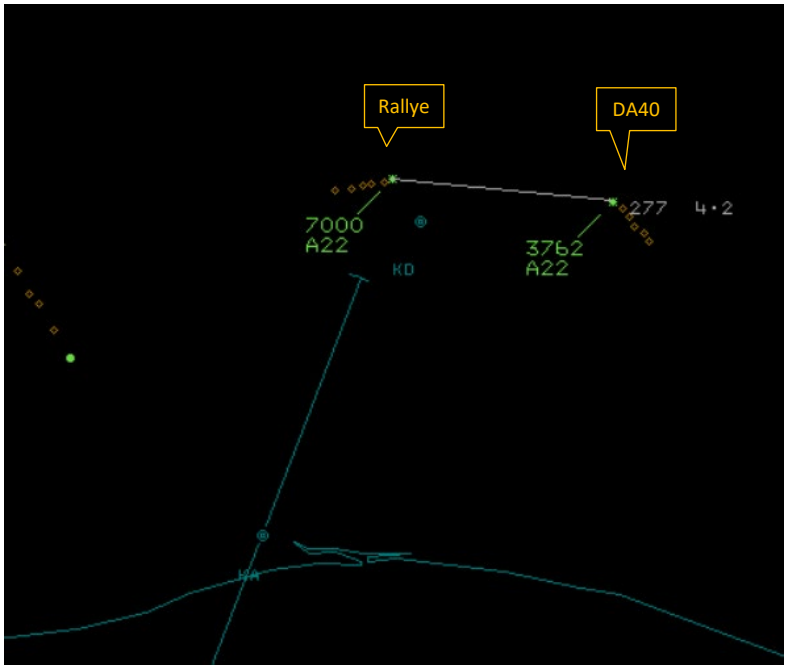

Figure 2 – 1756:28

At **1756:58** the pilot of the DA40 reported at NITEN. The controller replied: *"report established on the final approach track and that previously mentioned traffic now west of you, three miles, probably er going to transit just to the north of you*", to which the pilot replied: "*roger – thanks for that. We'll keep a look out, er wilco*" (Figure 3).

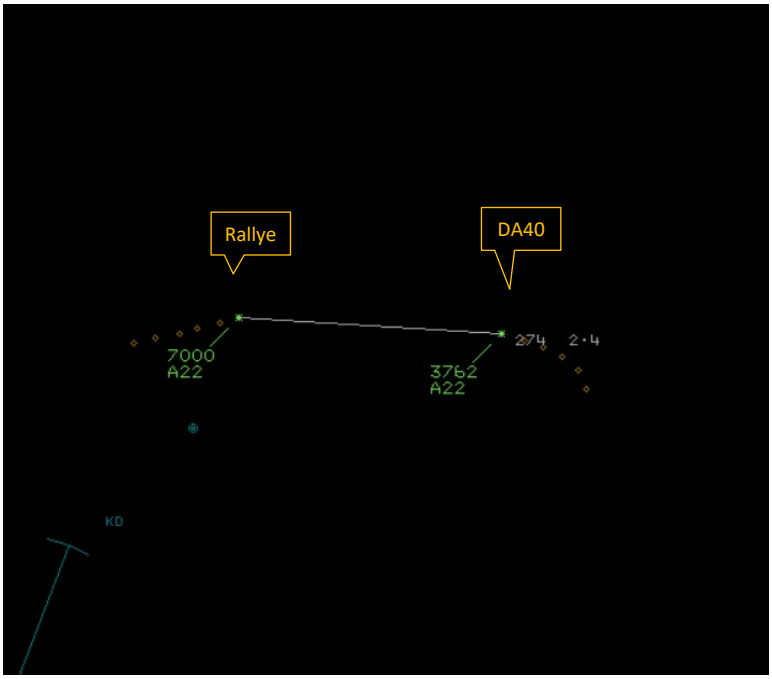

Figure 3 – 1756:58

At **1757:39** the controller updated the Traffic Information: *"further update. He's very close to you. Just a mile west now"*, which was coincidental with CPA on the radar replay (Figure 5).

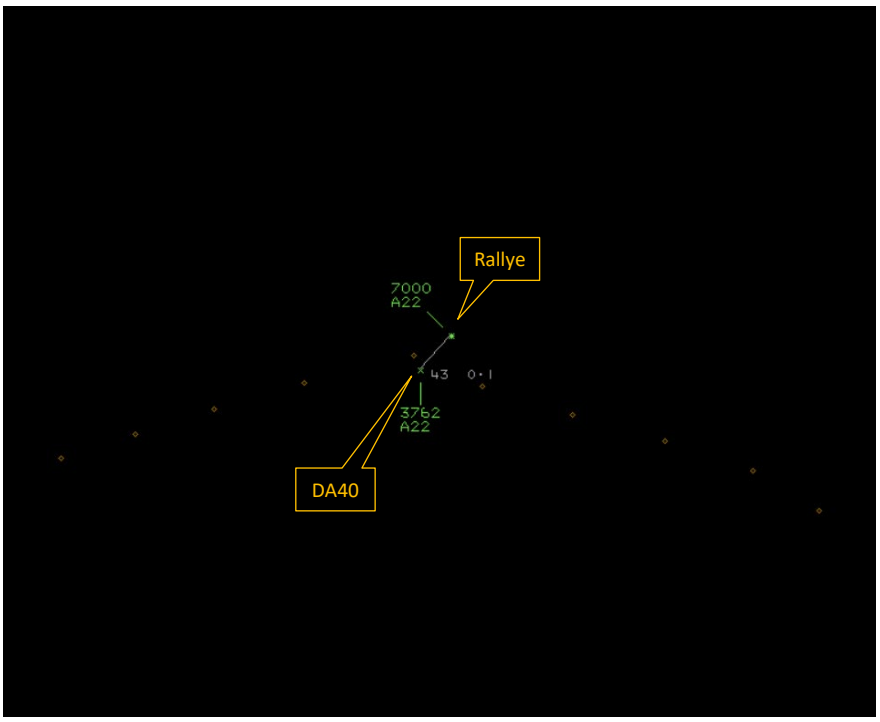

Figure 4 – 1757:39 – CPA

At **1757:58** the DA40 pilot advised*; "er, clear of traffic now – thanks for that".*

Shoreham ATC are licenced to provide both Tower and (Procedural) Approach services. They are not equipped with a surveillance radar. In accordance with CAP774 UK Flight Information Services:

> *Under a Procedural Service, the controller has no ability to pass traffic information on any aircraft that they are not in communication with, unless they have been passed traffic information by another ATS unit.*
>
> *Traffic information provided under a Procedural Service is unlikely to be as accurate as that provided by controllers using surveillance equipment.*
>
> *Therefore, pilots should be alert to the potential to incorrectly correlate the traffic information to other aircraft that they have in sight that are actually unknown to the controller*.

The Rallye was not in communication with Shoreham ATC and so under normal circumstances the Shoreham controller would not have been aware of its presence. (The aircraft passed over 7NM to the north of the airfield).

Although the controller referred in one of their transmissions to Flight Radar 24, the unit report subsequently referred to a monitor displaying ADS-B Exchange display data. Whilst trials on the use of Flight Information Display Systems were being conducted at certain ATC units in the UK, these were AFISO-only units.

The Shoreham ATC unit investigation acknowledged that:

> *Shoreham is not equipped with Radar or an equivalent surveillance-based system, however as part of an internal ATC engineering project, there is a display in the VCR showing ADS-B returns and other Mode S aircraft utilising a roof mounted aerial on the VCR. The data is not quality controlled, or formally recorded and is not approved for operational use. It is for "information only".*

The controller also acknowledged that they were using unofficial equipment but felt that they were justified in its use due to their perception that a high risk of collision existed between these two aircraft.

Any changes to ATM technologies, procedures and practices are to be subject to thorough testing and assessment prior to introduction into an operational environment. Such trials are to be conducted in accordance with CAP670 GEN 03.

The use of this type of equipment in the ATM environment is subject to an Air Navigation Order approval by the CAA. The approval is required to enable the CAA to satisfy themselves

a) as to the intended purpose of the equipment
b) that the equipment is fit for its intended purpose and
c) that the person is competent to operate the equipment

ATSI are not aware of any existing approval for the trial or use of ADS-B Exchange at Shoreham and recommend that Shoreham management engage with their CAA ATM Ops inspector at the earliest opportunity, to ensure that they remain compliant with regulatory requirements.

ATSI acknowledges that the pilot of the DA40 stated that they believed the risk of collision was very high, and that they had to take avoiding action having visually acquired the Rallye only after having received the unofficial Traffic Information passed by the Shoreham controller. The pilot of the Rallye reported not sighting the DA40 until after it had apparently taken avoiding action against them.

Conclusion

The passing of Traffic Information by the Shoreham controller derived from an unofficial source may have assisted the pilot of the DA40 in avoiding a collision.

Regardless of the type of service being provided in Class G airspace, a pilot is ultimately responsible for collision avoidance.

ATSI notes that as of 15th December 2021, guidance on the application for and use of Flight Information Displays Systems has been published by the CAA, however this is applicable to AFISO units only.

Shoreham ATC Investigation

Shoreham provides a mixture of Approach Procedural, Aerodrome and Air/Ground services during its published hours of operation. At the time of the report, a combined Approach Procedural & Aerodrome service was being provided by a single ATCO, using the callsign Shoreham Approach.

Shoreham is not equipped with radar or an equivalent surveillance-based system, however as part of an internal ATC engineering project, there is a display in the VCR showing ADS-B returns and other Mode S aircraft utilising a roof mounted aerial on the VCR. The data is not quality controlled, or formally recorded and is not approved for operational use. It is for “information only”.

The aerodrome and its published instrument approach procedures lie entirely within Class G airspace. The ATCO on duty was providing a Procedural Service to [DA40 C/S] which was cleared for an RNP approach to RW20. The other aircraft did not call Shoreham at any point. As [DA40 C/S] reached the vicinity of Burgess Hill, the ATCO noticed on the ADS-B screen that there appeared to be traffic potentially on a conflicting track with [DA40 C/S] at what appeared to be the same altitude. Three transmissions were made by the ATCO alerting the pilot of [DA40 C/S] to this traffic.

Had it not been for this timely Traffic Information which led to the pilots both looking specifically for the traffic, I believe the proximity of these aircraft would have been such that an actual risk of collision existed. In my opinion, while I fully understand the concerns that some may have regarding use of unofficial and unregulated data in an operational environment (I should stress that all ATCOs at Shoreham are aware of their responsibilities and limitations), in this instance the ATCO should be commended for making use of this unofficial source of information to pass information on unknown traffic as I believe this prevented a more serious incident or accident from occurring. It should be

noted that the ANSP is at the very early stages of a project to investigate the viability of using official remote surveillance data (PSR/SSR/Mode S) operationally.

As an aside, an incident of this nature in Class G airspace highlights the value of Electronic Conspicuity data in helping to resolve confliction. The ANSP believes that such data should be provided to smaller ATC units at a cost that is reflective of its use as a safety tool (i.e. an Air Traffic Monitor), rather than at a commercial rate where it is used primarily for revenue purposes.

UKAB Secretariat

The DA40 and Rallye pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1] If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[2] If the incident geometry is considered as converging then the Rallye pilot was required to give way to the DA40.[3]

Summary

An Airprox was reported when a DA40 and a Rallye flew into proximity 1NM west of Burgess Hill at 1757Z on Thursday 16th September 2021. The DA40 pilot was operating under IFR in VMC and in receipt of a Procedural Service from Shoreham. The Rallye pilot was operating under VFR in VMC and was not in receipt of an ATS.

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 controller 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 looked at the actions of the DA40 pilot. They were conducting an RNP approach to Shoreham and receiving a Procedural Service from Shoreham ATC. Members opined that because Shoreham doesn't have a radar, some form of Electronic Conspicuity (EC) equipment in the aircraft would have given the pilot more chance of notification of other aircraft in the vicinity. That being said, on this occasion the controller was able to provide some information. Some members wondered whether on first being told about the conflicting traffic the DA40 pilot could have taken some pre-emptive action, rather than continuing to track towards it. However others opined that given that the information was from an unverified source and the pilot described looking, but not being able to see the other aircraft, they thought maintaining course was understandable. Aided by the Traffic Information provided by the controller the DA40 pilot eventually saw the Rallye, and although this was later than desirable, subsequently took the appropriate avoiding action (**CF3**).

Turning to the Rallye pilot, members noted that they too were operating without any EC equipment and without an ATS either, they had no situational awareness that the DA40 was in the area (**CF2**). Members discussed whether the pilot should have called Shoreham as they were passing by, noting that with the PNB approaches that many airfields now had, the traditional feathers on the charts were not necessarily representative of where the approaching aircraft would be positioning. They agreed that whilst the pilot may not have thought that they were close enough to call Shoreham, they could have called Farnborough for a service and, had they requested a Traffic Service, may have received Traffic Information on the DA40. Members agreed that an ATS could have mitigated the lack of on board EWS(**CF1**). Without an ATS or an EWS the pilot was relying on see-and-avoid as the final mitigation against mid-air collision, although in the event the DA40 was obscured by the airframe (**CF5**) resulting in the pilot not seeing the DA40 until after the other pilot had taken avoiding action, effectively a non-sighting (**CF4**).

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.
[3] (UK) SERA.3210 Right-of-way (c)(2) Converging.

Members commended the controller for their actions in passing Traffic Information to the DA40 pilot. Whilst the information was unvalidated and unverified, nevertheless the controller left the pilot in no doubt as to the source of the information and provided the pilot with the knowledge to look for the Rallye. CAA advisors noted that caution must be exercised when using uncertified equipment to pass Traffic Information, but told the Board that a trial to use Flight Information Displays (FIDs) at AFISO units had been successful, with procedures for use now in place and they were looking to roll out the procedures to also allow ATC units to use them in the near future.

When determining the risk of the Airprox, members considered the reports from both pilots and the radar screenshots. They noted that although the Rallye pilot did not see the DA40 until CPA, the DA40 pilot had managed to take avoiding action to increase the separation, albeit late. They therefore agreed that safety had been much reduced; Risk Category B (**CF6**).

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021182			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Tactical Planning and Execution			
1	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider
	• Situational Awareness of the Conflicting Aircraft and Action			
2	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
	• See and Avoid			
3	Human Factors	• Identification/Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
4	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
5	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other
	• Outcome Events			
6	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B.

Safety Barrier Assessment[4]

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

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the Rallye pilot could have called Shoreham as they passed close to the airfield.

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

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because Rallye pilot did not have any situational awareness about the DA40

See and Avoid were assessed as **partially effective** because the DA40 pilot saw the Rallye late, and the Rallye pilot did not see the DA40 until after the other pilot had taken avoiding action.