

AAIB Bulletin S1/2022

SPECIAL

ACCIDENT

Aircraft Type and Registration:	Piper PA-28R-200-2, G-EGVA	
No & Type of Engines:	1 Lycoming IO-360-C1C piston engine	
Year of Manufacture:	1976 (Serial no: 28R-7635229)	
Date & Time (UTC):	2 April 2022 at 0920 hrs	
Location:	Approximately 20 nm west of Le Touquet	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (missing)	Passengers - 1 (missing)
Nature of Damage:	Aircraft missing	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	69 years	
Commander's Flying Experience:	200 hours (of which 4.7 were on type) Last 90 days - 1.3 hours Last 28 days - 0.7 hours	
Information Source:	AAIB Field Investigation	

Synopsis

G-EGVA was one of seven aircraft taking part in a club 'fly-out' from Wellesbourne Mountford Aerodrome to Le Touquet in France. A line of highly convective cloud was forecast on the intended route in the English Channel. As they approached the middle of the Channel, one of the pilots of G-EGVA, which was operating under VFR, reported to London Information that they were in cloud. Neither of the pilots onboard was qualified to fly in cloud. Shortly after this transmission the aircraft disappeared from radar. An extensive search of the area was coordinated by the UK and French Aeronautical Rescue Coordination Centres but neither the aircraft nor its occupants were found.

This Special Bulletin contains facts which have been determined up to the time of issue. It is published to inform the aviation industry and the public of the general circumstances of accidents and serious incidents and should be regarded as tentative and subject to alteration or correction if additional evidence becomes available.

The available evidence, at the time of issue of this report, suggests that control of the aircraft was lost when it entered cloud. This Special Bulletin is published to remind pilots of the danger of entering cloud when not qualified to fly in IMC, and highlights the guidance available in the CAA Skyway Code and Safety Sense leaflets.

History of the flight

On Saturday 2 April the two pilots¹ of G-EGVA were taking part in a flying club 'fly-out' from Wellesbourne airfield in Warwickshire to Le Touquet in France. Six other aircraft took part in the fly-out. One of the aircraft flew IFR². The six other aircraft, including G-EGVA, planned to fly VFR each flying a similar route from Wellesbourne towards Newbury and Goodwood then east towards Le Touquet. One of the pilots of G-EGVA had filed a flight plan using a flight planning and navigation app. The route, shown in Figure 1, was planned at 5,000 ft and the flight plan gave an estimated flight time of 1 hour 38 minutes.

Whilst the fly-out was arranged by the flying club there was no coordination or joint pre-flight planning. Each of the pilots reported that they had completed their own planning and made their own assessment of the weather conditions. The six VFR aircraft took off from Wellesbourne between 0750 hrs and 0830 hrs and proceeded separately. G-EGVA was the second of the VFR aircraft to takeoff at approximately 0754 hrs but, being a faster aircraft, overtook the first aircraft near Basingstoke.

At 0759 hrs G-EGVA contacted London Information and requested that their flight plan be activated³. At 0816 hrs they transferred to Farnborough Radar before returning to London Information at 0839 hrs. When they returned to London Information, they reported they were at 5,000 ft and 1 nm west of Littlehampton.

At 0846 hrs a video was posted online by the right seat pilot of G-EGVA. Extracts from the video are shown in Figure 2. The video showed the aircraft in flight passing abeam Shoreham with the flight appearing to proceed normally. The aircraft's altimeter showed 5,000 ft, the heading was approximately 090° and the airspeed indicator showed approximately 115 kt. The autopilot did not appear to be engaged and the engine and fuel indications, which were visible, appeared normal. Cumulus cloud could be seen in the distance ahead of the aircraft. Both occupants were wearing lifejackets with their shoulder harnesses worn under their lifejackets.

Footnote

¹ Although G-EGVA was a single pilot aircraft, both occupants were qualified pilots and may both have been involved in the management and decision making during the flight. Witnesses and video evidence suggest the left seat pilot was flying the aircraft during the accident flight but it is possible that the right seat pilot also undertook some tasks.

² The aircraft flying IFR, G-BJNZ, was involved in a separate accident on the same day and is the subject of a separate AAIB investigation.

³ The flight departed before Wellesbourne AFIS was open so they activated their flight plan once airborne.

**Figure 1**

Filed flight plan route via waypoints 'NUBRI', 'HAZEL', 'GWC' and 'ALESO'

**Figure 2**

Extract from the video posted at 0846 hrs showing the instrument panel and the cloud ahead of G-EGVA

The next radio exchange with G-EGVA occurred when London Information contacted them to confirm their position as the FISO⁴ estimated they would be approaching the boundary with French airspace and intended to transfer them to Lille Radar. The radio exchange is shown in Table 1.

Time	Station	Message
0915:51	London Information	"G-EGVA WHAT IS YOUR POSITION AND ALTITUDE"
0916:08	London Information	"G-EGVA LONDON INFORMATION"
0916:10	G-EGVA	"G-VA WE'RE CURRENTLY IN CLOUD".

Table 1

Last radio exchange between London Information and G-EGVA

London Information tried to contact the aircraft several times and asked other aircraft to try to relay a message without success. At 0920 hrs the London Information FISO informed Distress and Diversion (D&D) that they had lost contact with G-EGVA. The FISO also contacted Le Touquet and Lille Information to determine if they had contact with G-EGVA; they both confirmed they had no contact with the aircraft. D&D replayed the radar recording, in which G-EGVA was last visible on radar at 0916:31 hrs at a position 20 nm west of Le Touquet, descending rapidly. Lille Information also replayed their radar, which gave similar indications.

The UK and French Aeronautical Rescue Coordination Centres were informed, and a search was launched involving both French and UK vessels and aircraft. The search continued until the following evening but initially, nothing was found of the aircraft or its occupants. Subsequently, some items were found washed up on the French Coast.

Reports from other aircraft

The pilots and passengers of the other aircraft participating in the fly-out were interviewed after the accident. All the pilots reported encountering a line of cumulus cloud in the middle of the Channel. Four of the five other aircraft flying a VFR route had been able to descend and find a gap to fly around the cloud. Figures 3 and 4 were taken at 0918 hrs and 0924 hrs by one of the other aircraft and show the cloud conditions. Waterspouts can be seen descending from the base of the cloud in Figure 3. Having flown past this weather, the four aircraft continued normally to Le Touquet, returning to Wellesbourne later the same day.

Those onboard the last aircraft in the group initially tried to descend and fly around the weather, but decided they could not find a safe route and elected to divert to Shoreham airport.

The pilot of the aircraft which flew under IFR to Le Touquet reported that he estimated the cloud tops to be at least 8,000 ft when he flew past the line of cumulus cloud at approximate 0825 hrs.

Footnote

⁴ FISO - Flight Information Service Officer



Figure 3

Photograph taken at 0918 hrs showing the cloud mid Channel
(waterspout circled in red)



Figure 4

Photograph taken at 0924 hrs showing cloud to the surface

Found items

In the days after the accident several items were found on the French coastline which had come from the aircraft. On 5 April 2022 a bag belonging to the left seat pilot was found at Plage d'Equihen, containing his flying licence, logbook and other flight documents. On 7 April 2022 a kneeboard belonging to the right seat pilot was found at Plage de Wimereux and on 8 April 2022 a seat from G-EGVA was found on Plage de Sainte-Cecile. Figure 5 shows the approximate location of each item found and the final known position of G-EGVA.

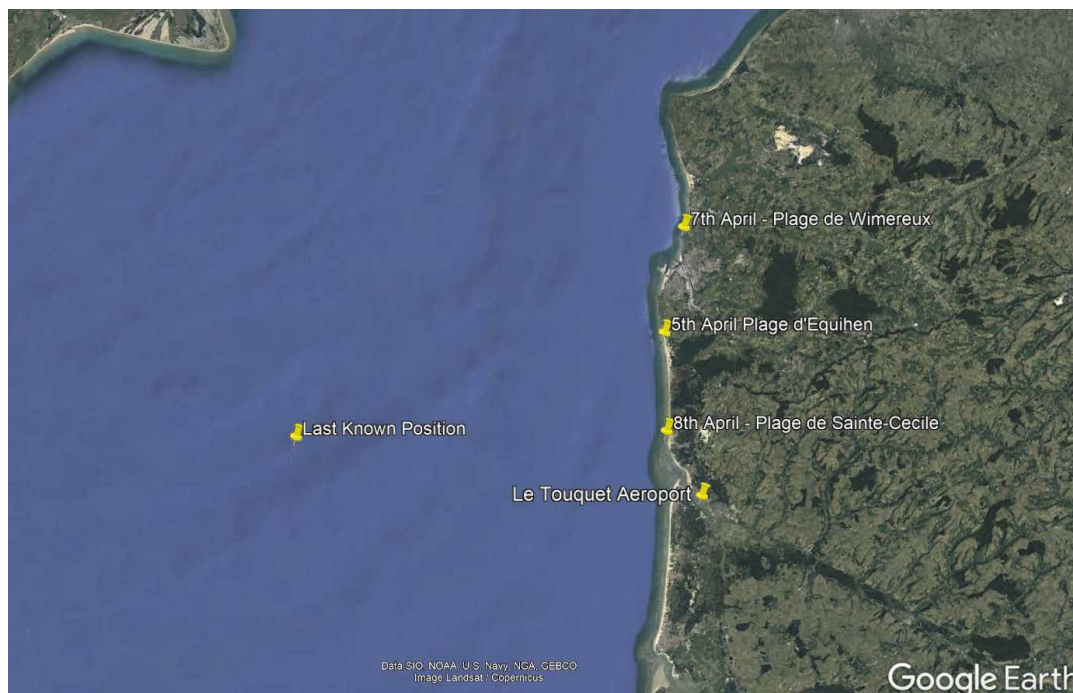


Figure 5

Location of items found on the French coastline

Radar data

Secondary surveillance radar data for G-EGVA and the nearest two aircraft of the 'fly-out' is shown in Figures 6 and 7. Figure 6 shows part of the ground track of these aircraft to the point when radar contact was lost with G-EGVA at 0916:31 hrs. Figure 7 shows the reported altitudes for these aircraft, corrected for the QNH of 1022 hPA. Indicated on both these figures is the point at which G-EGVA descended from its cruise altitude of about 5,000 ft amsl, and on Figure 7 the corresponding time when the two following aircraft were abeam this point.

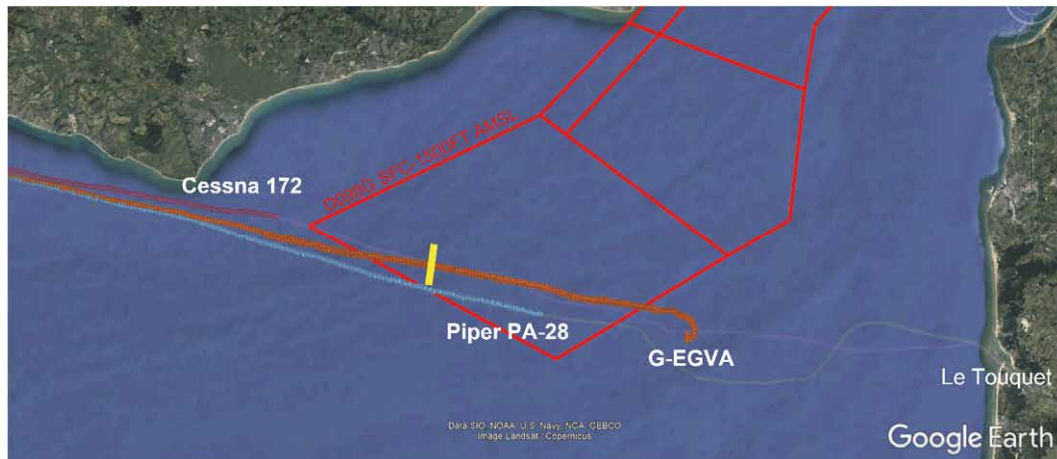


Figure 6

Radar track of G-EGVA up to the last known position at 0916 hrs with the location of two of the following aircraft shown. The yellow line on the G-EGVA's track is the point at which G-EGVA descended from its cruise altitude

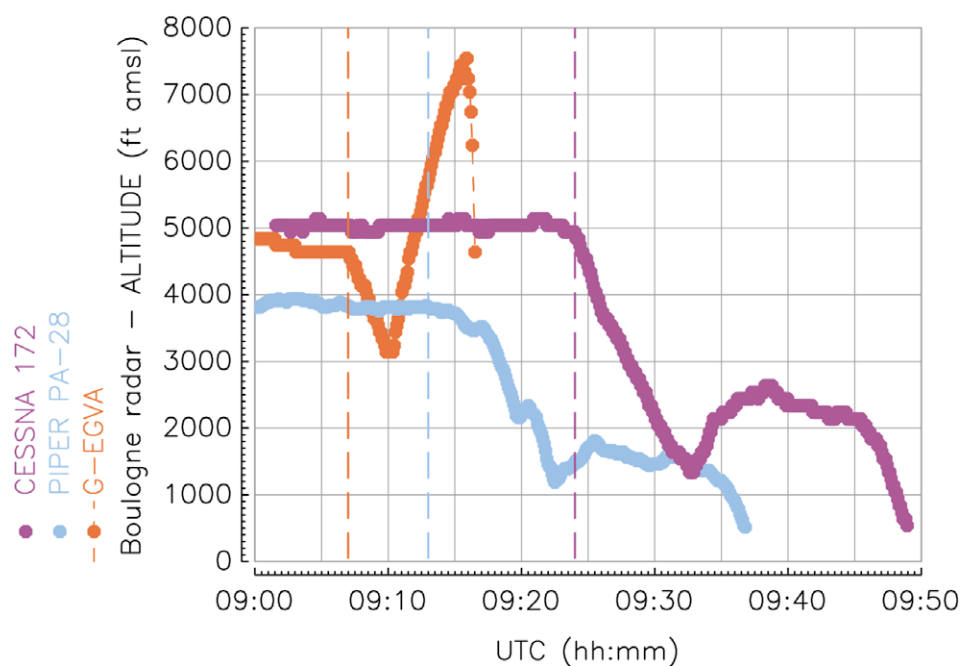


Figure 7

Altitude trace of G-EGVA and the following aircraft from 0900 hrs. The dashed line for G-EGVA shows when it descended from its cruise altitude – the corresponding dashed lines for the other aircraft show when they were abeam this point

Figure 8 is a plot of the altitude and radar-derived data for G-EGVA starting just before the descent from the cruise altitude. The plot shows that the aircraft descended to about 3,000 ft at approximately 500 fpm, where it remained for 30 seconds before climbing to over 7,000 ft at about 1,000 fpm, while maintaining an easterly track. Over the next 50 seconds the aircraft climbed 400 ft, descended 200 ft, and then climbed 300 ft, and at the same time

turned right, left, and right again through a total of 50°. The aircraft then continued to turn to the right in a descent. Radar contact was lost 40 seconds later as the aircraft descended through 4,600 ft with a calculated descent rate of just under 10,000 fpm. The last recorded position was 50°34'23.49" N 001°04'11.23" E at 0916:31 hrs.

Figure 8 also shows when the last radio transmissions between London Information and G-EGVA were made. G-EGVA was descending through 7,000 ft at about 3,000 fpm and accelerating during its final transmission.

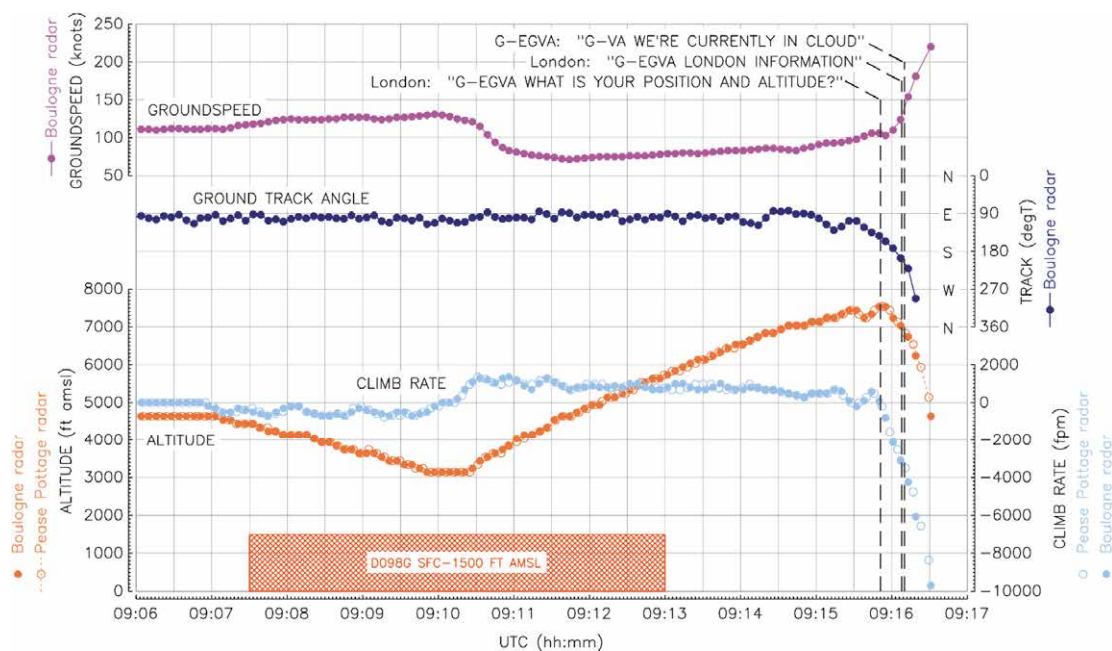


Figure 8

Altitude and radar-derived data for G-EGVA

Airspace

On the 2 April 2022 a Danger Area was active in the English Channel within which flight below 1,500 ft amsl was prohibited. The Danger Area is shown in Figures 6, 8 and 12. In the same area Class A controlled airspace exists above FL75. Therefore, as G-EGVA crossed the Channel, the aircraft was limited to flight between 1,500 ft amsl and FL75.

Forecast weather

On the 2 April 2022 a generally slack pressure pattern existed across the UK in association with high pressure. A convergence line lay from the Dover Strait to Le Mans, France.

An extract from the Met Office UK low-level forecast chart (F215) issued on the morning of the 2 April 2022 is shown in Figure 9. The forecast was valid between 0200 hrs and 1100 hrs. Initially the flight would have been in Area D. The conditions were forecast to be generally 40 km visibility with scattered or broken (SCT/BKN) cloud with a base between 2,000 and 5,000 ft amsl. However, there would be isolated (ISOL) patches of mist (BR)

reducing visibility to 3,000 m at times, with a further risk of visibilities reducing to 200 m in freezing fog (FZFG) until 1000 hrs. Associated with this there would be scattered or broken (SCT/BKN) cloud with a base between 500 and 1000 ft, lowering to the surface at times in fog.

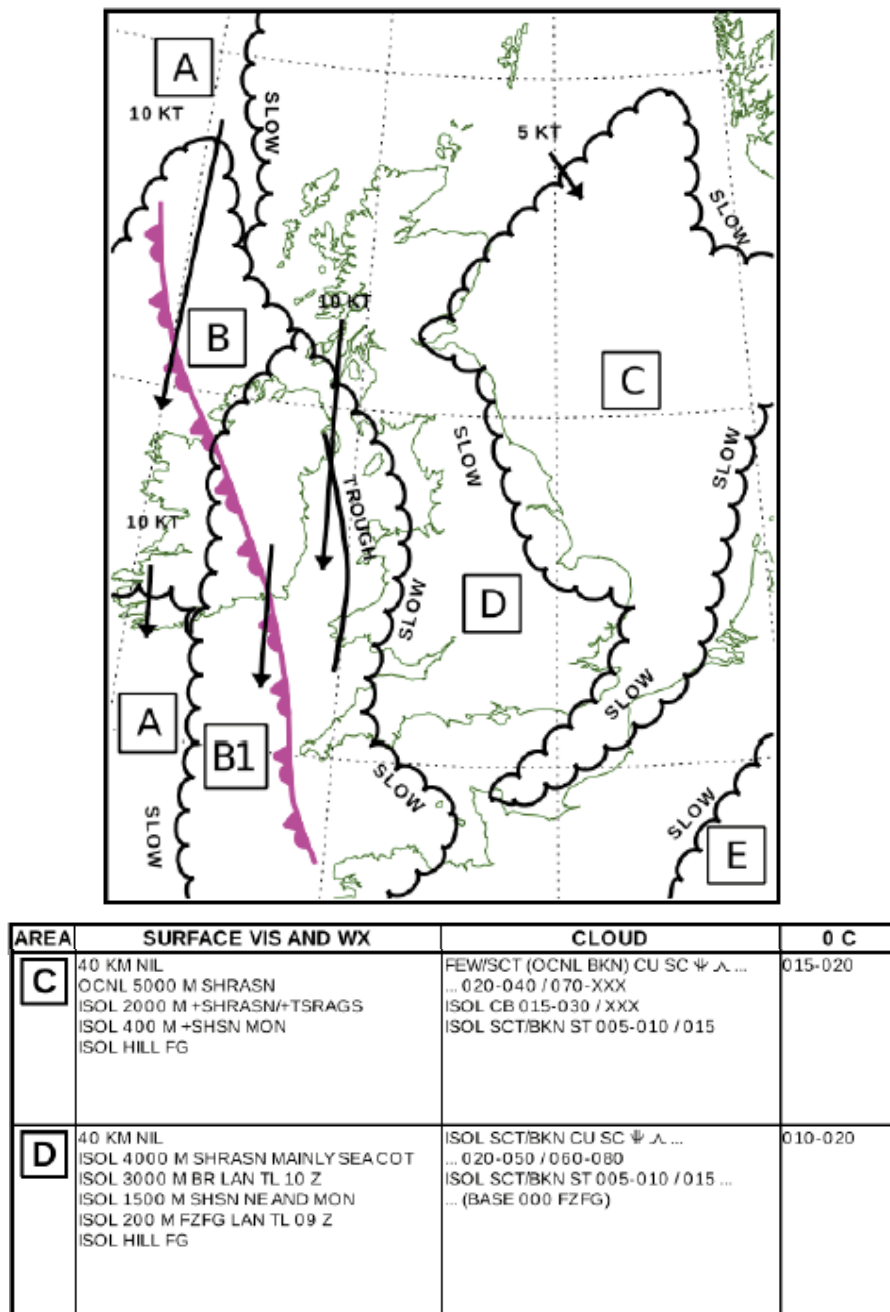


Figure 9

Extracts from the Met Office F215 valid 2 April 2022 between 0200 – 1100 hrs

On reaching the South Coast and the English Channel, the flight moved into Area C. Again, general conditions were expected to be 40 km visibility, with few or scattered, occasionally broken (FEW/SCT (OCNL BKN)) cloud with a base between 2,000 ft and

4,000 ft. Due to the convergence line occasional (OCNL) showers of rain and snow (SHRASN) were forecast to reduce visibility to 5,000 m in places. This would reduce further in isolated (ISOL) heavy rain and snow showers or thunderstorms with small hail or snow pellets (+SHRASN/+TSRAGS) and be associated with severe icing and turbulence. The heavier showers were expected to be generated by cumulonimbus (CB) cloud with a base between 1,500 ft and 3,000 ft.

The 0°C isotherm was forecast to be between 1,000 ft and 2,000 ft.

Actual weather

Satellite images taken at half hour intervals between 0800 hrs and 0930 hrs on 2 April 2022 are shown in Figure 10. The images show small amounts of cloud across mainland southern England, with clearer skies across the south-east. A band of cloud lay through the Dover Strait into northern France at 0800 hrs, moving slightly westwards through this time period. The white colour of the cloud in the imagery indicates higher cloud tops which, along with the shape of the cloud structure, suggests showery activity.

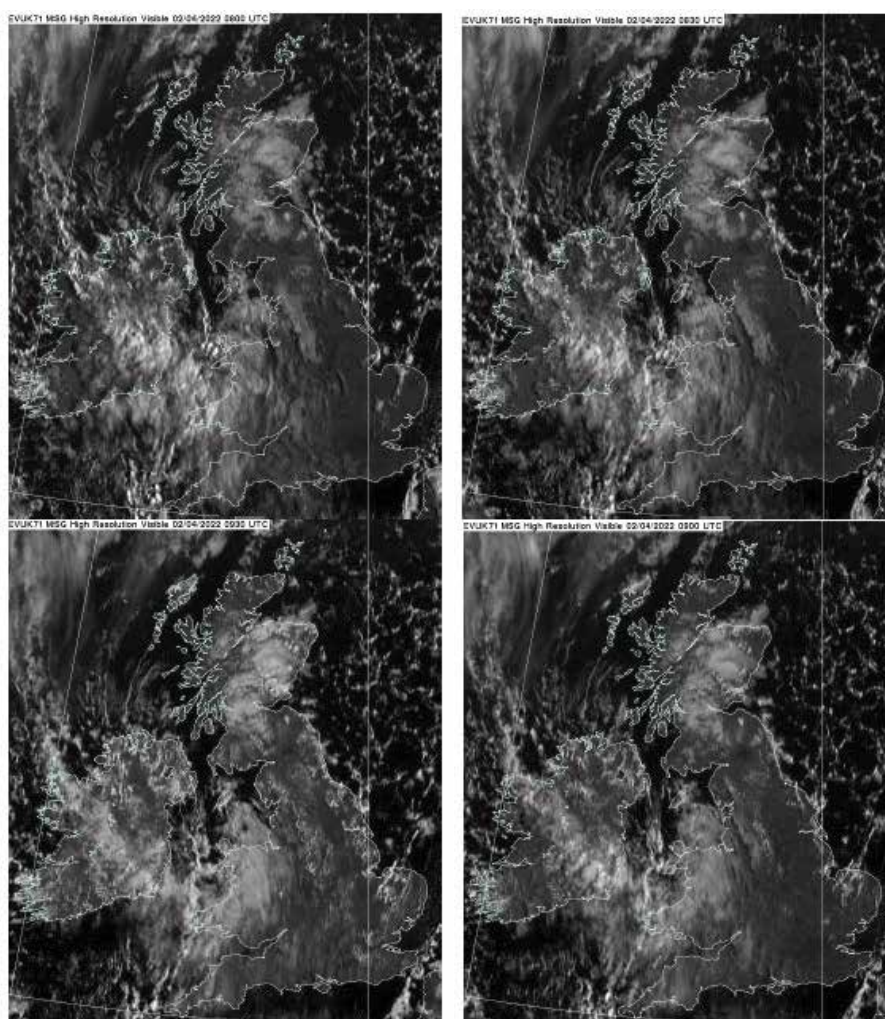


Figure 10

Satellite Imagery between 0800 hrs and 0930 hrs on 2 April 2022

Figure 11 shows four radar images between 0800 hrs and 0930 hrs on 2 April 2022. These show dry conditions across central and southern England. A band of showers is shown lying through the Dover Strait, which ties in with the cloud structure observed in satellite imagery. The colouring of the radar returns suggests some heavy precipitation to the west of Le Touquet around 0900 hrs.

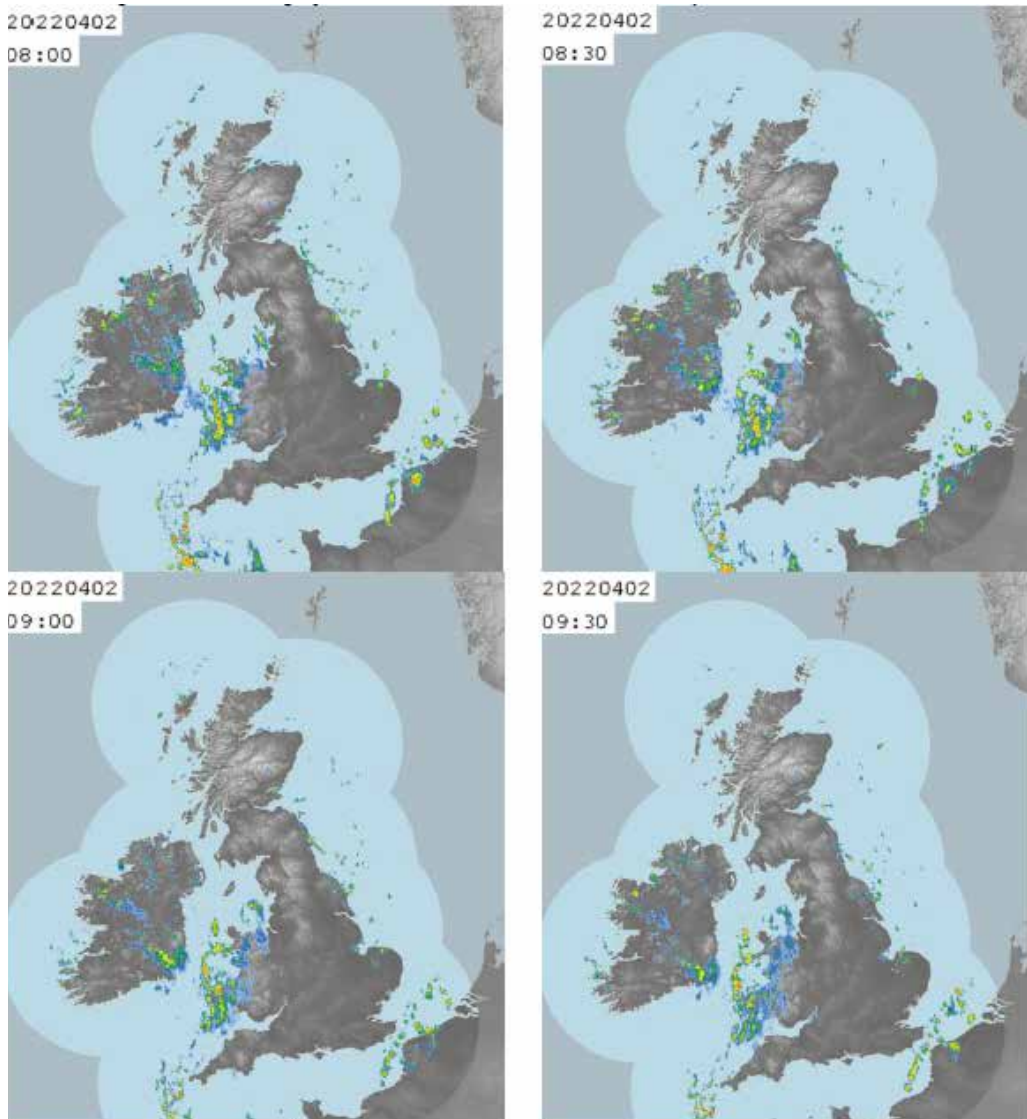


Figure 11

Radar imagery between 0800 hrs and 0930 hrs on 2 April 2022

Figure 12 shows the radar track of G-EGVA and the two following aircraft overlaid on the 0900 hrs weather radar image.

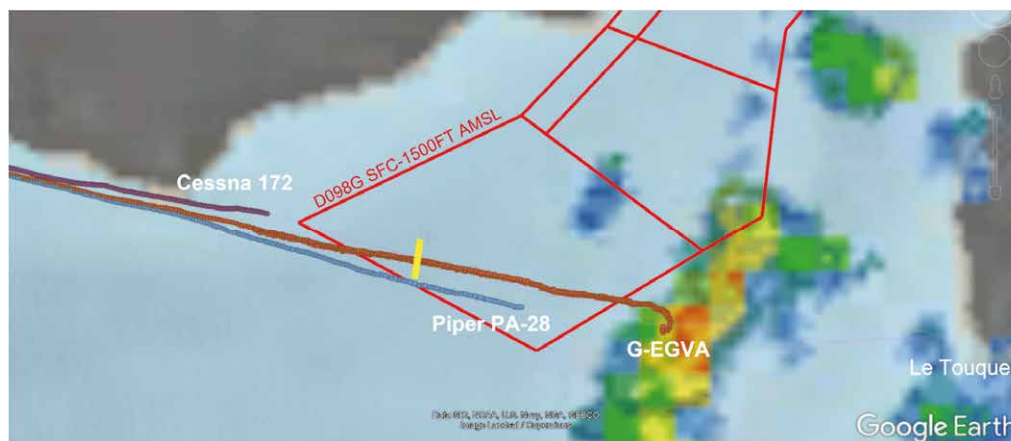


Figure 12

Aircraft tracks at 0916 hrs overlaid on the 0900 hrs weather radar image (the Danger Area described in the NOTAM is shown in red outline)

Pilot information

Both pilots held a Private Pilot's Licence with a valid Single Engine Piston rating and had completed the complex aircraft training required to fly G-EGVA. They had both learnt to fly at the flying club in 2010 and since qualifying had flown together often. The two pilots had taken part in club 'fly-outs' together before, including to Le Touquet, when typically, one of them would fly the outbound leg and the other would fly the return.

Neither pilot held an instrument rating or IMC qualification. The right seat pilot held a night rating.

The left seat pilot's logbook showed a total of 200.4 flying hours. He had flown two previous flights in 2022; one on 23 March (0.7 hours) which was in G-EGVA and included three takeoffs and landings, and one on 11 February (0.6 hours) in a Cessna 152. He had flown 4 flights in 2021, totalling 3.6 hours, including a recency flight with an instructor. He held a valid Class 2 medical.

The flying club's records indicated the right seat pilot had 167.2 flying hours. He had also flown two previous flights in 2022, totalling 1.4 hours, both flights were in a Cessna 152. He had flown a total of 14.1 hours in 2021. He held a valid Class 2 medical.

The families of both the pilots reported that they were fit and well prior to the flight and were well rested.

Passengers who had flown with the pilots on a previous trip to Le Touquet reported that they had briefly entered cloud during that flight, but on that occasion the aircraft had continued without incident.

Aircraft information

The PA-28R-200-2 Cherokee Arrow II is a four-seat, single-engine aircraft of metallic construction with retractable landing gear. G-EGVA was equipped with a Lycoming IO-360-C1C four cylinder, horizontally opposed, fuel-injected engine.

G-EGVA's Airworthiness Review Certificate was valid until 21 March 2023. The most recent maintenance was an annual inspection carried out between 14 February 2022 and 23 March 2022. Since then, it had flown 6 hours over 10 flights. Prior to the accident flight the aircraft had accumulated 2,886 flying hours. There were no open or deferred defects recorded in the aircraft's technical log.

The aircraft was fitted with an active carbon monoxide detector. Maintenance records indicate that during the recent annual inspection the function and condition of the detector and its batteries were checked, and the aircraft was inspected for evidence of carbon monoxide contamination; none was noted.

G-EGVA's seat covers and cushions had been replaced during previous maintenance in October 2021. The front seats were equipped with a three-point harness comprising a lap strap and a diagonal shoulder harness.

Fuel

Airfield and flying club records suggest that G-EGVA had approximately 38 USG of fuel onboard when it took off from Wellesbourne. The aircraft normally used approximately 11 USG per hour so it would have contained approximately 23 USG when the accident occurred.

Aircraft seat examination

The seat recovered from the French coast (Figure 13) was examined at the AAIB. No part number or serial numbers were evident on the seat, but the style and branding of the seat covers matched those of the new leather seat covers that had recently been fitted to G-EGVA. It was identified as being one of the rear seats.

The seat cover exhibited minor scuffing and several small tears but was otherwise in good condition. The lower seat frame was severely distorted, and the forward left mounting point had separated from the frame.



Figure 13

Seat recovered from G-EGVA

Initial findings

On the day of the accident an area of convective cloud was forecast in the English Channel which crossed the route planned by G-EGVA. The forecast suggested that isolated heavy rain and snow showers or thunderstorms were to be expected with a cloud base between 1,500 ft and 3,000 ft and associated with severe icing and turbulence.

Met Office weather radar data from the time of the accident confirmed heavy precipitation in the Channel suggesting a highly active convective area. Photographs taken by other aircraft in the area at the time showed waterspouts descending from the cloud and cloud down to the surface, again confirming a highly active convective area.

The video posted on social media by the right seat pilot of G-EGVA showed the aircraft at 5,000 ft with cumulus cloud visible ahead. Radar recordings show that after this time the aircraft descended to approximately 3,000 ft then climbed to above 7,000 ft whilst continuing on a constant heading towards the cloud. It is not possible to know the pilots' intentions but these changes in altitude might have been an attempt to avoid cloud. Once reaching 7,000 ft they were unable to climb any higher due to the controlled airspace above.

Shortly after reaching 7,000 ft the radio transmission from the aircraft confirmed the aircraft had entered cloud. Neither occupant was qualified to fly in cloud. It is not known if they entered cloud inadvertently. The video recording from G-EGVA and the photographs from the other aircraft show the cloud was clearly defined and visible when several miles away. So, there should have been sufficient time to turn around if they were unable to route around the cloud. It is possible that the occupants' previous experience of flying through cloud without incident encouraged them to try to fly through it on this occasion.

It is not known exactly when the aircraft entered cloud. However, in the couple of minutes before the aircraft was lost from radar, the aircraft started to vary its heading and altitude before descending in a steepening right turn. The forecast severe turbulence and icing in cloud may have contributed to the departure from controlled flight. When the last radio transmission was made, the aircraft was descending through 7,000 ft at approximately 3,000 fpm. At the last radar point the aircraft was passing 4,600 ft and descending at just under 10,000 fpm.

Initial assessment indicated that the damage sustained by the seat recovered from G-EGVA and its liberation from the aircraft were consistent with the airframe having been subject to considerable forces and substantial disruption.

Safety message

The evidence available to date indicates that control of the aircraft was lost when it entered a highly active cumulus cloud, which had been forecast. Neither occupant was qualified to fly in IMC. It is likely the aircraft was substantially damaged on impact with the sea.

Planning

It is very dangerous to enter cloud when not suitably qualified or when not in current practice in instrument flying. The AAIB has investigated numerous accidents when control of an aircraft was lost after intentionally or inadvertently entering cloud in these circumstances⁵. The CAA's Safety Sense leaflet – '*Pilots - it's your decision!*'⁶ contains advice on weather decision making. The document contains the following comment about loss of control in IMC:

'More than three quarters of the pilots killed when they lost control in IMC were flying in instrument conditions without an instrument qualification. Disorientation can affect anyone, particularly those who have not been adequately trained to fly on instruments and kept in practice. It is important to be able to see and recognise cloud ahead early enough to avoid it safely. Even an IMC rating does not impart sufficient skill for prolonged, intentional flight in instrument conditions. Unless you are in regular instrument flying practice it should only be regarded as a minimum skill to 'get out of trouble' if an unintentional excursion into IMC occurs.'

Footnote

⁵ Recent AAIB reports include G-CCPV, G-BHFI, G-OPEN and G-WAVS.

⁶ Available at <https://publicapps.caa.co.uk/docs/33/20130121SSL23.pdf> [accessed 6 May 2022]

The CAA 'Skyway Code' (CAP1535⁷) contains further guidance on pre-flight weather decision making, including the following guidance for avoiding loss of control caused by inadvertently flying into cloud:

'When there is either frontal convective or foggy weather around, it can be hard to predict exactly what conditions at a certain point will be. Study the weather carefully and consider options in different scenarios should the weather be worse than anticipated – calculate altitudes that if forced below by weather, you will turn back or divert.'

'Do not succumb to the belief that the 'weather is never as bad as forecast' – while that is sometimes the case, it is very often the exception that breaks the rule and causes the accident.'

'Decision making is generally easier on the ground away from the additional pressure of flying the aircraft – it is tempting to get airborne to 'have a look', but this could suck you into commencing a flight when it is not safe to do so.'

'If faced with a decision to be made in the air, do so within the parameters you set for yourself at the start of the flight – it is no good calculating a safety altitude if once in flight you think 'oh I'm sure descending a few hundred feet further will be OK'.'

Survivability

The radar evidence suggests the aircraft struck the water with a high rate of descent and the damage to the seat which was found suggests the aircraft was subjected to considerable forces and substantial disruption. It is therefore unlikely that the occupants had any opportunity to escape from the aircraft.

The video posted on social media showed that both occupants were wearing lifejackets. It appears to show that both occupants were wearing their shoulder harnesses under their lifejackets. This suggests that they secured their seatbelts before donning their lifejackets. When donning a lifejacket after securing a seatbelt there is a risk of becoming entangled in the belt when trying to rapidly exit the aircraft. The CAA Safety Sense Leaflet – 'Ditching'⁸ contains guidance on the use of lifejackets.

Further work

The investigation continues to examine operational, technical, and human factors which might have contributed to this accident.

Based on the other sources of available evidence regarding the accident flight, the AAIB does not currently intend to conduct an underwater search for, or recover, the aircraft

Footnote

⁷ Available at <http://www.caa.co.uk> [accessed 6 May 2022]

⁸ Available at <https://publicapps.caa.co.uk/docs/33/20130121SSL21.pdf> [accessed 6 May 2022]

wreckage. Should any additional items of wreckage become available during the course of the investigation, they will be examined by the AAIB.

A final report will be issued in due course.

Published: 13 May 2022.

AAIB investigations are conducted in accordance with Annex 13 to the ICAO Convention on International Civil Aviation, retained EU Regulation No 996/2010 (as amended) and The Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2018.

The sole objective of the investigation of an accident or incident under these Regulations is the prevention of future accidents and incidents. It is not the purpose of such an investigation to apportion blame or liability.

Accordingly, it is inappropriate that AAIB reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

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