AAIB
Air Accidents Investigation Branch

AAIB Bulletin 8/2026

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AAIB Field Investigation Reports

A Field Investigation is an independent investigation in which AAIB investigators collect, record and analyse evidence.

The process may include, attending the scene of the accident or serious incident; interviewing witnesses; reviewing documents, procedures and practices; examining aircraft wreckage or components; and analysing recorded data.

The investigation, which can take a number of months to complete, will conclude with a published report.

Incident

Aircraft Type and Registration:	Embraer 190AR, ZS-YAD
No & Type of Engines:	2 General Electric CF34-10E6 turbofan engines
Year of Manufacture:	2017 (Serial no: 746)
Date & Time (UTC):	17 June 2023 at 1235 hrs
Location:	St Helena Airport
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 5 Passengers - 28
Injuries:	Crew - None Passengers - None
Nature of Damage:	None
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	Not provided
Commander's Flying Experience:	Not provided
Information Source:	AAIB Field Investigation

Synopsis

The Air Accidents Investigation Branch (AAIB) was informed of concerns about a scheduled flight to St Helena on 17 June 2023 which encountered wind conditions necessitating two go-arounds, with the flight landing on the third attempt. During enquiries into the event, a further report was received from a different source regarding another scheduled flight on 10 September, during which four go-arounds were made before a landing could be achieved. The AAIB, as the nominated State Accident Investigation Authority for the British Overseas Territories of Saint Helena, Ascension and Tristan da Cunha, reviewed the events, but did not consider they met the ICAO definition of a serious incident. However, the AAIB considered that the immediate issues identified warranted further investigation under the St Helena Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 2019, to identify any potential safety improvements.

The subsequent investigation confirmed the challenging nature of operations to the airport due to its isolated location and wind effects acting on the final approach and runway. It also identified issues with the aircraft operation, airport and diversion alternate which it considered needed to be addressed. Safety Actions included the installation of runway distance marker boards and the imposition of additional wind limits by the operator.

Six safety recommendations are made to address intended improvements which have yet to be implemented and some improvements where agreement could not be reached. In particular, the matter of allowing relevant flights to nominate Wideawake Airfield on Ascension Island as a diversion, in accordance with the Wideawake Agreement of 2023, remained unresolved.

Background

The AAIB was informed of concerns regarding a commercial flight to St Helena on 17 June 2023. These centred on the weather conditions at the time, which resulted in significant turbulence on the approach and the aircraft having to go-around twice late in the approach whilst it was over the runway. The reporter considered the isolated nature of the airport may have put undue pressure on the crew to land in the prevailing conditions, because of the lack of a suitable alternate. A further report was received by the AAIB from a different source regarding another commercial flight on 10 September 2023. This flight had departed from Ascension Island and was due to fly to St Helena before then continuing on to Johannesburg. It had to go-around four times due to turbulence before it could land at St Helena. Its onward flight to Johannesburg then had to be delayed until 12 September, due to continuing poor weather.

St Helena

St Helena is a small island of 47 square miles situated in the South Atlantic, with a population of about 4,400 people. It is part of the British Overseas Territory of St Helena, Ascension, and Tristan da Cunha. The St Helena Government website describes it as '*one of the remotest islands on Earth… 1,200 miles from Africa and 1,800 miles from South America*.' It further states that *'the only other near landmass is Ascension Island, which is 807 miles to the northwest.'*

St Helena Airport

Historically, St Helena was only accessible by ship, with a UK Government owned vessel, the RMS St Helena, providing scheduled access for both goods and people. The UK Government then made the decision to fund a major project to build an airport on the island, which was completed and certified to commence operations on 10 May 2016.

Geographical restrictions meant there were limited locations for siting the runway, which was constructed in an area called Prosperous Bay Plain. Completion of the airport required extensive earthworks to accommodate the single 1,950 m long concrete runway, aligned 01/19[1], at an elevation of 1,017 ft. The location of the runway and the need for such extensive works meant that the land at either end of the runway dropped away steeply and there was only limited space available for parking aircraft.

On completion, it was found the runway suffered from significant turbulence and wind shear due to the prevailing wind and local topography. This predominately affected aircraft on final approach to Runway 19, sometimes preventing them touching down and requiring them to go-around. The alternative of landing downwind on Runway 01 greatly reduced the turbulence problem, but resulted in significant payload restrictions due to the tail wind component encountered. The situation was sufficiently severe that research was conducted in 2016 which indicated that significant changes to the local topography could considerably reduce turbulence and wind shear on the approach to Runway 19. These changes were not, however, carried out and the situation remained.

Footnote

[1] The runway was redeclared in early 2022, being previously Runway 02/20.

Certification of the airport is the responsibility of Air Safety Support International (ASSI), a not-for-profit wholly-owned subsidiary of the UK Civil Aviation Authority. ASSI also has the responsibility for managing the civil aviation State Safety Programme for St Helena on behalf of the Governor.

Commercial air services

Commercial air services commenced on 14 October 2017 and the RMS St Helena's final voyage from the island took place in February 2018, after which the ship was sold. A tender had been run to select an operator to provide regular air services to St Helena in place of the ship, intended to start in 2016. The original winner of the tender was based in South Africa and operated B737-800 aircraft. It never commenced passenger flights after a single trial flight to St Helena on 18 April 2016 proved too problematic due to the issues with the turbulence on the approach. A further operator was then selected, which was also based in South Africa, and operated the Embraer ERJ-190. Prior to passenger operations commencing, the aircraft manufacturer conducted trial flights to the island in December 2016 to assess the aircraft's suitability and the most effective means of operating flights under the prevailing conditions. These trials were reported to be successful and passenger flights commenced in October 2017 under the new operator, initially on a weekly basis.

The regular commercial flights to St Helena originated in Johannesburg and routed via Walvis Bay International Airport in Namibia, where aircraft refuelled before heading out over the Atlantic. Most flights then returned from St Helena to Johannesburg the same day, but without requiring a refuelling stop in Walvis Bay en route. Once a month, after landing in St Helena, the aircraft would continue to Ascension Island where it would stay overnight. It would then return to St Helena the next day, before continuing to Johannesburg.

During the COVID-19 pandemic in 2020, the flights from South Africa were suspended, with links to St Helena replaced by flights from the UK. The UK operator chartered to provide these flights used both A318 and B757 aircraft. Flights originated in the UK and flew via a refuelling stop in either Ascension Island or Accra, Ghana. The flights carried sufficient fuel to divert from St Helena to Ascension. At the end of the pandemic, commercial services re-started from South Africa in March 2022 with the previous operator and the UK charter flights ceased.

Extended Diversion Time Operations (EDTO)

The operator involved in the flights on 17 June and 10 September 2023 applied EDTO operations to all its revenue flights conducted in twin-engine aircraft over a route that contained a point further than one hour flying time from an adequate alternate airport, at the approved one-engine inoperative (OEI) cruise speed (under standard conditions in still air). Under EDTO, enhanced standards were applied, which included specific requirements for maintenance, crew composition, airfield status and weather conditions, described in section 10.16 of their Operations Manual. Due to the isolated nature of St Helena, flights to the island originating in Walvis Bay were conducted under EDTO and, as an 'isolated airport', no diversion airport was necessary. Despite this, the operator reported that there were, however, numerous occasions where aircraft were still able to carry sufficient fuel to divert to Ascension Island as the closest available airport and only realistic alternative. The return flights from St Helena to South Africa were also conducted under EDTO restrictions.

Weather minima for the flights included the same crosswind limits for landing as other non-EDTO flights. These conditions, however, needed to be forecast to exist from the earliest planned arrival time to an hour beyond the latest planned arrival time.

The Operations Manual described a 'Critical Point' en route for EDTO flights, beyond which the aircraft only had sufficient fuel on board either to continue to the planned destination or to divert, but not both. For flights to St Helena, this represented the point at which the decision needed to be made whether the conditions were suitable to land at St Helena, or to return to Walvis Bay.

Further details relating directly to St Helena were listed in Operations Manual Volume 3, Section 6.31. These included a warning to expect severe turbulence on approach. It stated that the route was only to be operated by selected crew, which was reported elsewhere as meaning a crew of two experienced captains who had undergone related training. Under a subsection titled 'Alternates' it stated that no diversion was required, although 'Ascension' was listed, together with a warning of limited operational times. This section also stated an island holding fuel reserve of two hours was to be carried (described under the EDTO section as at normal cruise consumption).

Wind effects

The elevation of the airport and its proximity to the sea caused air to rise up over the neighbouring cliffs. Gullies also caused the wind to accelerate in areas, with the joint effect resulting in large variations in wind speed along the length of the runway. In addition, two rock outcrops called the King and Queen Rocks, extending about 200 ft above the airfield to the north-east of the runway, generated a large turbulent wake. In the prevailing east to south-east winds, this could lead to significant wind shear and clear air turbulence across the final approach to, and touchdown zone of, Runway 19.

The UK Met Office had a weather station on St Helena which provided weather information to the airport. They provided the following general overview of the wind conditions at St Helena.

> *'The prevailing wind at St Helena is between east and south for 98% of the time. Across central and southern parts of the runway, the low-level wind remains typically from the southeast but is subject to varying degrees of acceleration. The northern part of the runway is often, and the final approach path almost always, in the lee of King and Queen Rocks, resulting in terrain-induced wind shear and highly variable surface winds.'*

The weather station used three anemometers to record wind information: one next to each threshold and one next to the runway, slightly beyond the mid-point of Runway 19. There was also a Doppler LiDAR[2] installed next to the Runway 19 touchdown zone. Together, these had allowed a comprehensive collection of wind data to be accumulated since August 2016. Comparing forecast versus observed winds had provided the ability to deduce typical wind patterns in different flow regimes.

Met Office studies have shown the following wind effects on the runway:

- **Runway 19 threshold**: very variable in direction, often more than 180° in a ten-minute period. Mean wind speeds similar to those on Runway 01 threshold, although much more variable, with gusts often likely at twice the mean wind speed.
- **Runway mid-point:** similar in direction to the Runway 01 threshold wind, with little directional variation. Windspeed is often twice the 925 hPa wind[3], due to topographical funnelling.
- **Runway 01 threshold:** relatively steady in both direction with speed generally less than the 925 hPa wind.

Weather reporting

Weather reporting at St Helena Airport was provided by ATC controllers who were trained as Met Observers and who were supported by a Met Office forecaster. Weather information was published on the St Helena Airport website page. The weather section on the website was protected from general access by a password, available from the airport authorities for relevant users. The airport reported they could also provide weather reports by other means, such as WhatsApp, to specific users. Wider dissemination of aviation related weather reports for St Helena would need to be done through the Luanda-based part of the Aeronautical Fixed Telecommunication Network (AFTN)[4]. Without this, transmission of weather data was prevented from being incorporated into more widespread information systems such as Lido, as used by the operator. It also prevented automatic transmission of the latest weather updates by ACARS, meaning the operator had to relay weather information to their aircraft via their operations centre.

It is understood that attempts to be included under the Luanda-based AFTN had proved problematic and it was unlikely to be achieved in the foreseeable future. Aircraft operating to St Helena were therefore reliant on third parties accessing the weather via the internet and relaying it to them by another means.

Footnote

[2] Doppler LiDAR (light detection and ranging) is a remote-sensing technology that uses laser light and the Doppler effect to measure wind speed, direction, and motion.
[3] 925h Pa wind refers to the wind at a specific pressure level in the atmosphere, approximately 780 m above mean sea level.
[4] A global network of fixed telecommunication links used for the exchange of aeronautical messages, such as flight plans, NOTAMs and weather reports.

Reference to windshear and turbulence in TAFs has been adopted at some UK military airfields prone to adverse wind conditions, namely Gibraltar and Mount Pleasant in the Falkland Islands. There is, however, no equivalent mechanism under existing guidance for inclusion of turbulence groups in forecasts at civilian airfields. Windshear and turbulence forecasts were not therefore included in the St Helena published TAFs, although detailed weather reports were provided by the Met Office via the airport website.

The Met Office forecaster at the airport also provided ATC with live information on the nature and height of any flow reversal (windshear) expected for aircraft when they were on their approach to land at the airport. At the time of the flights, this relied on communications between the Met station, where the LiDAR terminal was based, and the air traffic controllers in the tower.

An improved LiDAR system was due to be installed in 2026 which included an additional LiDAR terminal in the ATC tower. Separate wind speed gauges have also been installed for each anemometer in the tower to allow them to be monitored simultaneously, replacing the single gauge that previously existed which had to be switched to check each anemometer in turn.

Weather forecasts for 17 June and 10 September 2023

Met Office weather forecasts for both 17 June and 10 September 2023 are included in Appendices 1 and 2. The planned landing time for the aircraft on both days was 1325 hrs.

The forecast for 17 June was issued at 0430 hrs that day. The TAF predicted a steady wind of 18 kt from 160° with gusts up to 32 kt at the aircraft's planned arrival time. The detailed wind forecast gave a Runway 19 threshold wind speed of about 21 kt, gusting up to 36 kt for the same time period. A later updated TAF received by ACARS at 1132 hrs gave a forecast wind speed of 20 kt from 160°, gusting to 34 kt. The forecast predicted a 30-39% chance of severe turbulence.

The forecast for 10 September was issued at 0725 hrs that day. The maximum steady forecast wind on the TAF was 30 kt from 160°, gusting up to 48 kt, but with the possibility of the wind speed temporarily reaching 38 kt with gusts up to 60 kt. The detailed wind forecast gave a Runway 19 threshold speed of 28-35 kt gusting 42-50 kt with a 30-39% chance of 38 kt gusting 58 kt. The forecast predicted an over 50% chance of severe turbulence.

Wind reports

The Met Office provided recordings of the actual wind conditions at St Helena Airport for both 17 June and 10 September 2023. On 17 June, at the aircraft's planned arrival time of 1325 hrs, the 10-minute average wind speed at the mid-point reached 40 kt. The general wind direction was around 180° true at the Runway 19 mid-point and 180°/160V220 for the Runway 19 threshold.

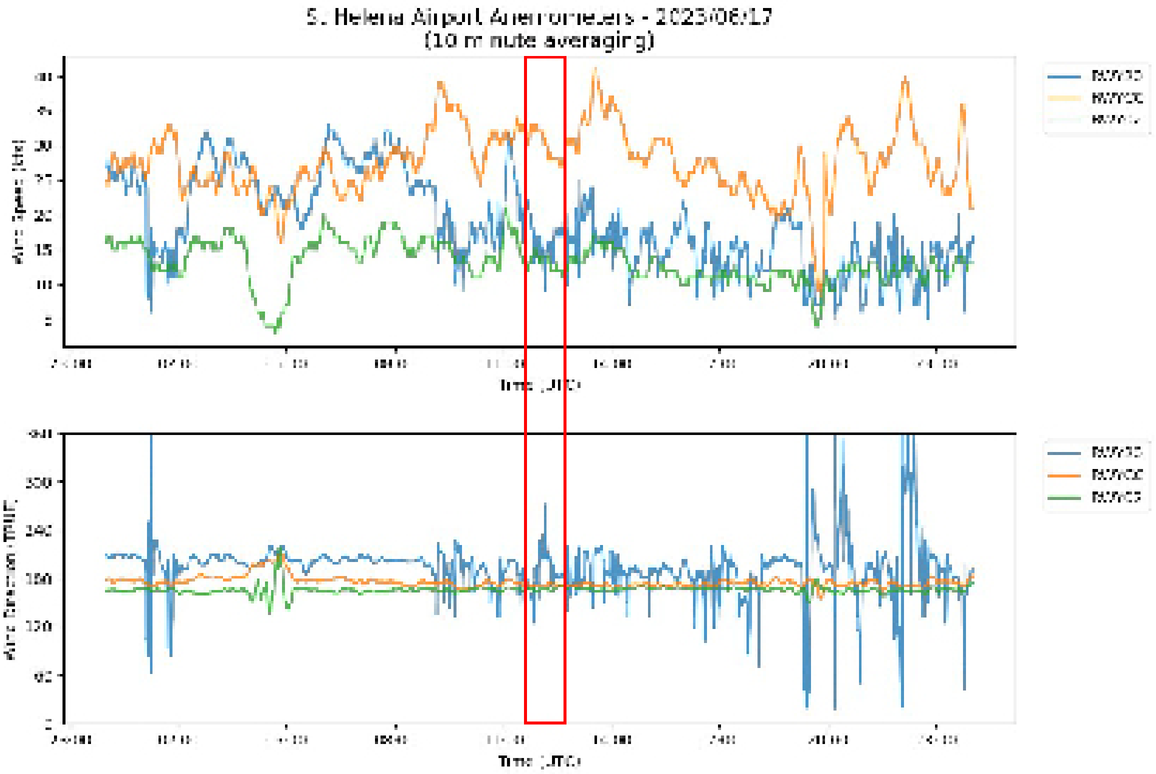


Figure 1

St Helena Airport Wind Recordings - 17 June 2023

On 10 September, the 10-minute average wind speed at the Runway 19 mid-point was consistently 40 kt and above, and at the threshold around 30 kt. The wind direction gave a general head wind along Runway 19.

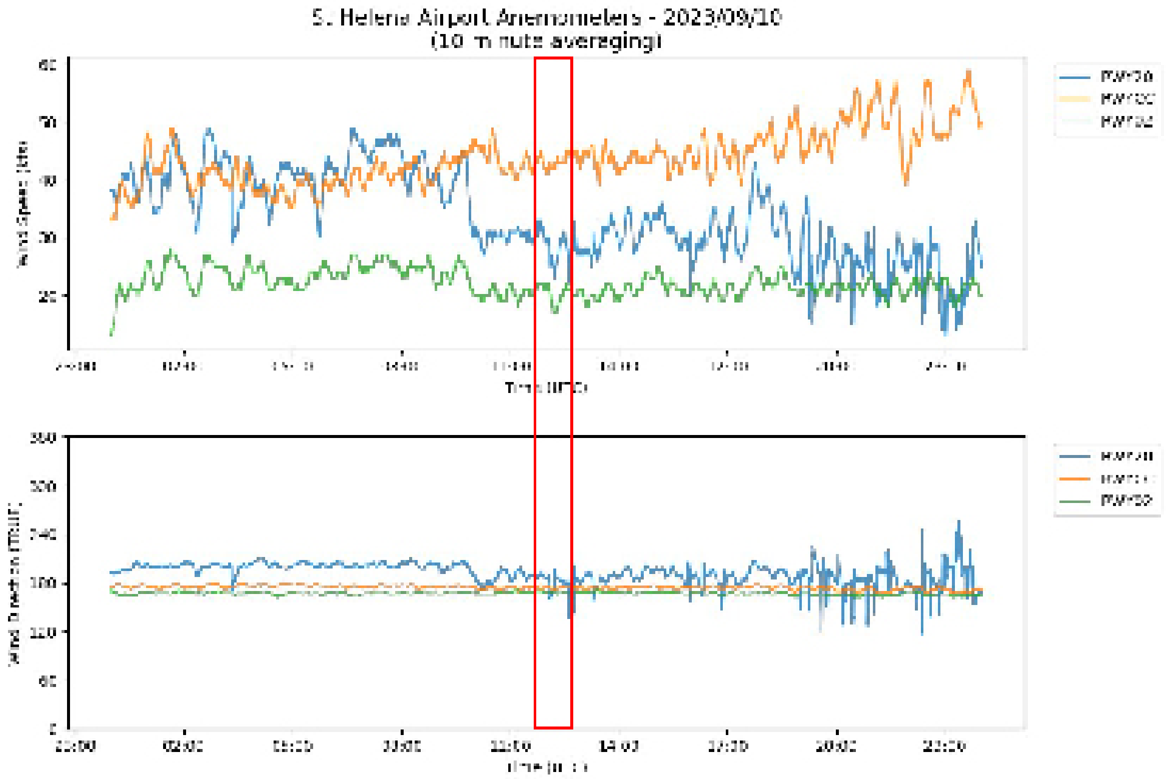


Figure 2

St Helena Airport Wind Recordings - 10 September 2023

Wind limits

The operator's landing crosswind limit for a dry runway was 38 kt and for a wet runway 31 kt, with neither limit required to take account of gust speeds.

The operator published Briefing Notice EMJ HLE 001 on 28 February 2025 introducing a 55 kt runway mid-point maximum wind limit for dispatch. They reported that, from experience, wind speeds at the mid-point up to 55 kt generally resulted in manageable flying conditions during the approach, but that windshear increased significantly above this speed.

Aircraft information

Autothrottle system

The E190 autothrottle system employs a series of motors and mechanical clutch mechanisms which, when engaged, drive the throttle levers to a position corresponding to the calculated engine N1 setting required to achieve a selected airspeed or vertical profile. The system can drive the throttle levers between the flight idle and go-around detents and allows for pilot inputs to override the autothrottle within this range without disengaging it. When the pilot releases the throttle levers, the autothrottle system will automatically return the throttle levers back to the commanded throttle setting to achieve the selected airspeed.

Manually moving the throttle levers with the autothrottle engaged results in an OVRD (override) indication appearing on the Flight Mode Annunciator (FMA) on each pilot's Primary Flight Display (PFD), in place of the currently active autothrottle mode. The autothrottle override annunciation is recorded to the FDR and Quick Access Recorder (QAR) once per second as being either 'active' or 'inactive.'

With the autothrottle engaged, the activation of a windshear warning results in the autothrottle system automatically positioning the throttle levers to the TO/GA position, to assist the crew in executing a go-around and windshear escape manoeuvre. The crew, however, are still required to manually advance the throttle levers beyond the go-around thrust to the MAX detent (see next section).

Aircraft braking

The aircraft has an autobrake system with four different levels of braking available: LOW, MED, HIGH and RTO (for takeoff only). For landing, the required autobrake setting is determined by reference to the relevant performance data for the particular runway being used. Where performance is limited, autobrake alone may be insufficient, requiring the manual application of full braking on touchdown. When this is required, the manufacturer recommended that autobrake HIGH is still selected, to allow the aircraft to commence maximum automatic braking on touchdown prior to the application of full manual braking.

Windshear cautions and warnings

The manufacturer advised that WINDSHEAR CAUTION and WINDSHEAR WARNING alerts were generated by the EGPWS, taking account of aircraft configuration, radio altitude and wind conditions. The alert appeared on both pilots' PFDs, with a WINDSHEAR CAUTION being displayed in orange and a WINDSHEAR WARNING being displayed in red. In the event of a windshear warning, by pressing the TO/GA button or advancing the throttle levers to the TO/GA position, the vertical flight director mode entered a 'windshear escape' mode.

Response to windshear cautions and warnings

In the event of a WINDSHEAR CAUTION activation, the manufacturer's Standard Operating Procedures Manual (SOPM) permitted pilot discretion as to whether to continue the approach or go-around, based on the known conditions. However, whenever a WINDSHEAR WARNING occurred, the SOPM required that the approach must be discontinued and the 'windshear go-around' procedure followed.

No specific modelling had been conducted by the aircraft manufacturer to determine whether the warning system was valid for the specific wind conditions encountered at St Helena due to the local terrain. Irrespective of this, the manufacturer's Standard Operating Procedures (SOPs) stated that all windshear warnings must be treated as genuine and a go-around manoeuvre flown.

The operator's Operating Manual, OM-1 Section 10, 10.13.26.5 paragraph (h), however, stated:

> *'During the approach, a go around shall be executed in the event of negative windshear. However, in conditions of turbulence associated with strong winds and not thunderstorm or frontal activity, a warning may be treated as cautionary provided that this warning has been anticipated, briefed for in the approach briefing threat and error and appropriate allowance made.'*

Windshear go-around procedure

Following a WINDSHEAR WARNING, if engaged, the autothrottle advanced the throttle levers to the TO/GA position. The windshear go-around procedure required that the handling pilot then manually advanced the throttle levers to the MAX detent, which is past the go-around power throttle lever detent. This results in the autothrottle system disengaging and giving maximum available power. After escaping windshear, the handling pilot reduces the throttle levers to the go-around detent, at which point the autothrottle can be re-engaged by using a switch on the mode control panel.

Recorded information

By the time the AAIB was made aware of concerns about the flights on both 17 June and 10 September 2023, the relevant CVR and FDR information had been overwritten. However, flight data was available from the QAR via the operator's Flight Data Monitoring (FDM) program, which allowed analysis of the data from these flights.

Wind speed and direction, calculated by the Flight Management System (FMS) using data from several aircraft sensors, were also recorded by the QAR. The FMS continually sampled this data, processing it through filtering algorithms, to generate wind calculations. This created a slight lag between changes in actual wind conditions, and those recorded on the QAR and displayed on the cockpit instrumentation.

The FMS Target Speed was recorded which corresponded with the selected approach speed, V_{APP}, during the approach. The selected autobrake setting, and the footbrake forces and deflections, were also recorded. These are discussed further in the aircraft performance section of this report.

17 June 2023

QAR data from the 17 June flight indicated that three landing attempts were made at St Helena. The recorded wind speed and direction calculated by the FMS were consistent with those forecast in the TAF, indicating a wind direction from around 140°, and speed between 20 - 24 kt. For all three approaches, autobrake LOW setting was selected.

During the first two approaches, which were separated by about seven minutes, recorded data indicated a reduction in FMS-calculated wind speed by about 20 kt when the aircraft was between 100-200 ft aal. At the same time, the wind direction changed from a crosswind from the left to a crosswind from the right with a slight headwind component. This corresponded with a recorded airspeed reduction of about 5 kt.

Recorded data indicated that during the first approach there were no windshear warnings. The crew manually overrode the autothrottle system at about 200 ft aal, both reducing and increasing thrust, with the OVRD indication remaining active until the aircraft was approximately over the threshold. The go-around thrust mode was then selected as the aircraft descended above the touchdown zone to a radio height of 28 ft agl and then climbed away. Following the activation of the go-around mode, the autothrottle system was disconnected and remained so for the rest of the flight.

During the second approach, despite only similar changes in the wind speed and direction as detected during the first approach, a windshear warning was triggered at about 160 ft aal. Recordings showed that, with the autothrottle already disengaged, the throttle levers were moved to the full power position, before being moved to the idle position about two seconds later. The commander stated that he did this in order to control the increase in airspeed associated with the positive windshear encountered and avoid a flap overspeed. Before the engines had reached idle N1, the throttle levers were then moved to a position corresponding to an N1 of about 70%. The windshear warning cleared about 10 seconds after it appeared, as the aircraft descended through 60 ft aal. About 12 seconds later, the data showed the go-around mode was selected at a radio height of 8 ft agl, with the aircraft approximately 800 ft beyond the touchdown aiming point marker, as it began a go-around.

During the third approach, as the aircraft descended through approximately 150 ft aal, a change in FMS-calculated wind strength and direction was again recorded. The wind speed was reduced by approximately 10 kt and changed from having a headwind component to a slight tailwind, before reversing back to a headwind again. No windshear warning was recorded during this approach. The aircraft touched down at 1329:41 hrs, within the touchdown zone just past the aiming point marker. The fuel quantity remaining onboard at touchdown was 5,600 kg, sufficient to divert to Ascension Island.

10 September 2023

The flight on 10 September was the monthly flight from Ascension Island to St Helena, operated using another Embraer 190AR, registration ZS-YAJ, during which five landing attempts were made. The crew reported that the wind at the runway mid-point kept re-energising the aircraft, making it difficult to land safely within the touchdown zone. The first four approaches were flown directly one after the other and all resulted in the aircraft having to go-around. Following the fourth go-around, the aircraft then entered a hold for about 25 minutes before successfully landing at the fifth attempt.

Different autobrake settings were selected for the landing attempts. The first approach used autobrake LOW, approaches two, three, and five used autobrake MED and approach four used autobrake HIGH.

Recorded data indicated that a windshear warning activated during the first, third and fourth landing attempts at between 185-280 ft aal. The recorded wind speed and direction calculated by the FMS indicated winds from about 140°, varying between 26 - 35 kt, consistent with those forecast in the relevant TAF. The data indicated that the wind speed was relatively steady until the point at which windshear was encountered.

On the first approach, the windshear warning appeared at about 185 ft aal. The data showed the autothrottle entered the go-around mode with the throttle levers moving to the go-around power position, before they were overridden and quickly moved back to about the mid-range position. Both the windshear warning and go-around mode remained active, with the autothrottle being manually overridden as the aircraft deviated several times from the 3° glidepath in a sine wave pattern. Falls below the glidepath corresponded with the throttle levers being pushed forward and climbs above the glidepath corresponded with the throttle levers being pulled back. The windshear warning ceased at about 50 ft aal, about 12 seconds after it started. A go-around was then commanded about 9 seconds later, when the aircraft was at a height of about 5 ft over the runway, beyond the end of the touchdown markers.

On the third approach, the autothrottle advanced the throttle levers to the TO/GA position in response to a windshear warning, which occurred at about 230 ft aal, and were then manually retarded to the idle position about four seconds later. The autothrottle remained engaged with the go-around mode also remaining active. The windshear warning stopped at about 20 ft aal, about 15 seconds after it started. Recorded data indicated that the autothrottle was being overridden until a go-around was commenced from a radio height of about 1 ft aal, with the aircraft nearly halfway down the runway.

On the fourth approach, a windshear warning was triggered at about 280 ft aal and remained active for about 10 seconds. This led to further multiple overriding of the go-around auto thrust mode, as in the previous approaches. The autothrottle was disengaged at about 140 ft aal, just as the windshear warning ceased, and the approach was continued. About 6 seconds later, a go round was initiated from a radio height of about 40 ft aal, just beyond the runway threshold.

On the successful landing attempt, FMS position data indicated that the touchdown occurred between the last two touchdown zone markers, corresponding to about a third of the way along the length of the runway. The aircraft touched down at 1419 hrs with 6,200 kgs of fuel onboard, having departed Ascension Island with about 12,200 kg. Flight paperwork noted a diversion fuel requirement of 4,700 kg back to Ascension.

Aircraft performance

Approach speed calculations

The speed required to be flown during the final approach (V_{APP}) was calculated by adding a safety increment to the appropriate reference speed (V_{REF}) for the runway in use. This was intended to ensure that turbulence or gusts would not result in the aircraft flying below V_{REF} at any point on the approach. It was limited to a maximum increment of 20 kt to protect against over speeding the flaps and was calculated by adding half the steady headwind component plus any gust factor to the reference speed. One of the pilots commented that the speed increment chosen for these flights was based on experience for the prevailing conditions.

Tables 1 and 2 summarise the V_{REF} speeds based on recorded aircraft gross weights, and the calculated V_{APP} based on forecast wind data for each approach on the flights on 17 June and 10 September. The actual recorded airspeed at the 1,000 ft aal and 500 ft aal gates, as well as the airspeed above the threshold, are also shown.

Approach	V_{REF} (kt)	Expected V_{APP} (kt)	FMS Target V_{APP} (kt)	Indicated Air Speed (kt)		
				1,000 ft	500 ft	50 ft
1	119	139	129	128	130	132
2	119	139	129	137	130	154
3	118	138	129	135	132	138

Table 1

Reference, target and actual airspeeds for the approaches on 17 June 2023

Approach	V_{REF} (kt)	Expected V_{APP} (kt)	FMS Target V_{APP} (kt)	Indicated Air Speed (kt)		
				1,000 ft	500 ft	50 ft
1	125	145	135	134	137	149
2	125	145	135	155*	150	141
3	125	145	135	155*	151	154
4	122	142	142	149	146	168
5	122	142	132	136	145	139

(*) This corresponded with the top of descent onto approach

Table 2

Reference, target and actual airspeeds for the approaches on 10 September 2023

Landing distance calculations & braking performance

An assessment was made of the landing distance required for a series of braking regimes, using the recorded aircraft weight, airfield information and weather conditions at the time of the approaches. This revealed that in order to land with the required 15% safety margin in the 1,550 m landing distance available on Runway 19, an autobrake setting of HIGH was required for each of the approaches made.

For the landing on 17 June, autobrake LOW was set and five seconds after touchdown manual braking was applied using about 20% of the available brake pressure. The aircraft slowed to about 10 kt by the end of the runway where it turned in the runway turning circle through 180° to taxi back to the runway exit.

For the landing on 10 September, autobrake MED was set and about 17 seconds after touchdown manual braking was applied using about 20% available brake pressure. Again, the aircraft slowed to about 10 kt by the end of the runway where it turned in the runway turning circle through 180° to taxi back to the runway exit.

Manufacturer's flight trial

The manufacturer's flight trial to St Helena in 2016 was conducted in December, a month when wind conditions are generally more favourable. These flights included instructional flights with the operator.

The flights conducted did not encounter any windshear warnings, however, the manufacturer advised that, on crossing the turbulence zone, emphasis should be given to aircraft energy management. This included the use of the auto throttle override function whenever needed to promptly tackle aircraft energy variations. In addition, the manufacturer's SOPs emphasised that all windshear warnings should be complied with and a full windshear go-around manoeuvre flown.

They also advised that due to the nature of the approach, they would expect the aircraft to be fully stable by 1,000 ft aal or a missed approach flown.

Stabilised approach criteria

The operator's Flight Crew Operating Manual (FCOM), Section 3.28.1, contained the operator's stabilised approach criteria as follows:

> *'A go-around is mandatory if the approach is not stable by 500 ft AFE but should be stable by 1,000 ft AFE in IMC. A stable approach is a contributing factor to a successful flare and touchdown. Unstable approaches may result in difficult landings with unexpected sink rates, side loads or bounce backs. An approach is considered stabilised when all of the following criteria are met:*
>
> a) *The airplane is on the correct horizontal and vertical flightpath.*
>
> b) *Only small changes in heading and pitch are required to maintain this flightpath.*
>
> c) *The airplane speed is between V_{REF} and V_{APP} + 10 kts.*
>
> d) *Thrust setting is stabilised above idle and appropriate for configuration, target speed and constant rate of descent.*
>
> e) *The airplane is in the desired landing configuration.*
>
> f) *Sink rate less than:*
>
> - *1000 fpm on a 3° slope*
> - *1100 fpm on a 3.1° to 3.5° slope*
> - *1200 fpm on a 3.6° to 4° slope*
> - *1300 fpm on a 4.1° to 4.5° slope*
>
> g) *Checklists have been completed.*
>
> h) ***Instrument Approaches**: deviations within half scale deflection of the GS/GP and LOC/LNAV/CDI.*

i) ***Visual Approaches**: within 10° of the runway centreline track and on the glide path.'*

The data indicated that all three approaches on the 17 June flight met the stabilised approach criteria at the 500 ft aal gate.

On the 10 September, the first, fourth and final approaches met the stabilised approach criteria at the 500 ft aal gate. The second and third approaches did not meet the criteria as the aircraft was configured with FLAPS 5 (20°) at 500 ft, with full flap then being selected later in the approach. On the second approach, the speed criterion at the 500 ft gate was also not met as the aircraft was faster than V_{APP} + 10 kt by 11 kt.

The fourth approach had FLAPS 5 (20°) set at 500 ft, but as this remained for the remainder of the approach, this was considered to be the final landing flap setting intended.

Wideawake Airfield, Ascension Island

Ascension Island, forming part of the UK Overseas Territory of St Helena, Ascension, and Tristan da Cunha, has a single airport, jointly operated by the UK and US military. The operation of the airport relies on an agreement between the UK and US governments, originally drawn up in 1956 and which has been periodically updated. This included an *'exchange of notes'* which came into force on 6 June 2016 '*Concerning the Use of Wideawake Airfield on Ascension Island by Civil Aircraft (Air Links and Alternate Aerodrome Agreement)*', pre-empting the commencement of commercial flights to and from St Helena. This was followed by a revised agreement which came into force on 9 June 2023. Article I of the agreement stated the following:

'***Civil Use of Wideawake Airfield***

1. In accordance with the provisions of this Agreement and its Annex, which shall constitute an integral part of this Agreement, Wideawake Airfield shall be open for use by civil aircraft engaged in the following air services:

a. Scheduled and non-scheduled domestic commercial air services between Ascension and St. Helena, as defined in paragraph 2; and

b. Scheduled international and non-scheduled international air services departing from or destined for St. Helena, if it is either impossible or inadvisable for the aircraft in question to proceed to or land at the aerodrome of intended landing and the operator of the aircraft has in advance selected Wideawake Airfield as an alternate aerodrome for the purposes of flight operations.

2. "Commercial air services" means air services provided by a carrier that transports passengers, cargo, or mail for remuneration or hire and offers its services to the general public.'

Other parts of the agreement covered the provision of various facilities at the airfield. This included the US authorities being responsible for ATC, air navigation services and firefighting. The UK authorities were responsible for meteorological, airfield ground handling and passenger handling facilities and services, as well as any supplementary firefighting and crash and rescue cover that may be required by civil aircraft using the airfield. Some services at the airport were contracted out to civilian companies, including ATC and firefighting, as well as certain airfield ground handling functions. Due to the low frequency of flights, elements of the operation were not continuously open, but could be staffed at about an hour's notice. The UK Royal Air Force (RAF) Operations Centre for the airfield was, however, open 24 hours a day.

The agreement limited the number of civil movements each week to four, which included any takeoff or landing. Aircraft nominating the airfield as a diversion did not count towards this total, unless they actually diverted there. The number of movements was also open to periodic review, should it be needed.

Despite the existence of the agreement, the RAF Operations Centre would not accept any civilian flights covered by the agreement nominating Wideawake Airfield as a diversion, although they stated they would accept such flights, where possible, in an emergency. The reason they stated was the limited ground handling resources available to service flights, especially should more than one flight arrive at any one time. In particular, they pointed to a lack of available accommodation for passengers should an aircraft be required to stay overnight.

Communications by the RAF with the AAIB showed a lack of willingness to engage in discussion on the issue by the relevant authorities, or to nominate those taking responsibility for it. Rather, responsibility was suggested to lie with the operator or the South African CAA. The RAF stated that they had discussed their position with the operator who were willing to accept it.

Protracted enquiries by the AAIB finally identified that responsibility for the operation of RAF Ascension Island Base fell to the Cyber and Specialist Operations Command (CSOC) within the Ministry of Defence. They stated that they considered the base was operating within the position set out under the Wideawake Agreement 2023. They further stated that, as a military airfield, its civil use was subject to specific conditions. These included the requirement for advance notification, confirmation of capacity, and assurance that support to civilian aircraft can be provided without adversely affecting defence operations. These provisions governed both routine use and any request by civilian operators to nominate the airfield as a diversion option. These comments contradicted previous responses by the RAF that under no circumstances was the airfield to be nominated by the operator as a diversion. The lack of implementation of the provisions for allowing civilian diversions to Wideawake Airfield at an operational level was explained to be due to a lack of ground handling resources and available accommodation for passengers on Ascension Island.

St Helena Airport diversion procedures

St Helena Airport described having a good working relationship with the RAF Operations Centre on Wideawake Airfield, but neither organisation had SOPs or agreements in place for arranging diversions of aircraft from St Helena. The St Helena Airport's Manual of Air Traffic Services (MATS) contained a chapter on aircraft diversion procedures as follows:

> **'CHAPTER 3. AIRCRAFT DIVERSION PROCEDURES**
>
> ***3.1.*** *On receipt of information that an aircraft is diverting into St Helena, Air Traffic Control will inform the Aerodrome Manager, who will inform all relevant agencies at the Airport.*
>
> ***3.2.*** *Aircraft diversions from St Helena will be as determined by the pilot and handled by Air Traffic Control.*
>
> ***3.3.*** *In the event of deteriorating weather conditions at FHSH for inbound flight that has passed the Point of No Return (PNR) or Equal Time Point (ETP), the Aerodrome Manager shall be notified. The Aerodrome Manager shall take the following actions: Establish communication with Ascension to initiate the Airlink diversion plan.*
>
> *[the] (sic) Aerodrome Manager shall notify the following authorities:*
>
> - *Ascension Island Government (AIG) Administrator*
> - *Governor*
> - *Chief Secretary*
> - *Airlink OCC/Relevant operator*
>
> *FHSH ATC shall keep the flight crew advised of frequent weather conditions. Once a decision to divert has been made a diversion message shall be sent on AFTN and coordination made with FNLU Oceanic.'*

The MATS, however, contained no detailed instructions for ATC staff at St Helena regarding points of contact at Wideawake Airfield, or means of communication. This was of particular importance as the RAF Operations Centre reported having only a very limited communication infrastructure with unreliable landlines and internet connections. Whilst key services such as ATC were not continually available at Wideawake Airfield, the flying time to get there from St Helena was sufficient for these services to be brought into operation before an aircraft's arrival.

St Helena runway touchdown zone markings

The standard ICAO touchdown markings consist of a series of paired stripes, one either side of the centreline, spaced at intervals down the runway at set distances. At St Helena, the first set of stripes began 150 m from the threshold, with three further sets of stripes spaced at 150 m intervals (Appendix 3). This was the same for both runway directions and, due to the relatively short length of the runway, meant that the final set of stripes when landing in either direction was only approximately 300 m away from the adjacent set of stripes for the opposite runway. This could potentially lead to a pilot misinterpreting how far down the runway the aircraft was when touching down.

The aerodrome chart contained in the Aeronautical Information Publication (AIP) for St Helena Airport noted this potential problem and marked a hot spot on the runway, referred to as HS1. This covered the area between the final touchdown markings for both runway directions with the following caution:

> *'**HS1** Caution: short distance between final touchdown zone markings for runway 01 and 19 can lead to miscalculation of remaining distance available to landing aircraft.'*

ICAO defines an aerodrome hot spot as:

> *'a location on an airport movement area with a history or potential risk of collisions or runway incursion, and where heightened attention by pilots/drivers is necessary.'*[5]

The term is, however, sometimes used to highlight potential areas of concern which might otherwise be missed. In this case, the potential for confusion should have also appeared under the remarks section in FHSH AD Section 2.9 but was absent.

Aircraft operator's comments

The operator stated that it was not possible to establish if there would be windshear or not based on the forecast winds. Whilst these might forecast the possibility of windshear over a period of time, this was not sufficiently precise to allow for accurate planning as the conditions changed constantly. This was complicated by the threshold, mid-point and upwind threshold winds all being different, in both direction and speed. The operator stated the crosswind was not generally a limiting factor.

The operator believed this made limiting the number of go-arounds flown before holding off for an improvement in the wind conditions of little value. Rather, it was considered that, due to the constantly changing nature of the wind, it was better to repeatedly fly approaches until the conditions on a particular approach allowed a successful landing. This, they stated, was different to a scenario where the cloud base or visibility was limiting where it was more straightforward to determine whether they were within limits or not prior to commencing an approach. They considered that at St Helena, limiting the number of approaches that could be flown would force the crew to enter the hold, limiting opportunities to land whilst burning fuel.

Pilots were required to go-around if the approach was unstable. The operator also encouraged them to go-around if they were otherwise unsure it was safe to continue. They specifically selected experienced crew for the route which was always flown by two captains because of the difficult conditions.

Footnote

5 ICAO Annex 4 – Aeronautical Charts, 11th Edition, July 2009, page 1-5.

Both the flight on 17 June and 10 September were flown by the same flight crew, with one pilot acting as commander on 17 June and the other on 10 September. As required, they were both experienced captains and there were no comments raised by the operator during conversations with the AAIB giving rise to any concerns on their performance, which was monitored by the operator's FDM program.

When asked by the AAIB, the operator made the following recommendations to improve the safety of flights to St Helena.

- Installation of distance marker boards on Runway 19.
- The provision of forecast and actual weather conditions for St Helena so that they could be broadcast automatically by aviation information providers, such as Lido, through ACARS. They stated this '*could potentially improve safety significantly if it was possible to obtain the FHSH weather via ACARS as we would immediately receive updates when a new TAF or METAR is published. Lido would then also receive weather updates and immediately alert the flight follower of any adverse conditions.*'
- Ensuring the passing of information by ATC during the final stages of the approach regarding the nature and expected height of any flow reversal (windshear) became a standard procedure.
- Ensuring the availability of Wideawake Airfield on Ascension Island as a planned diversion airport. This would be of importance where there had been a deterioration in the weather below that forecast, after passing the critical point. It could be based on a 90-minute callout basis due to the flight time between St Helena and Ascension. This statement contradicts that by the RAF that the operator was content with the current arrangement.

Analysis

The construction of the airport at St Helena presented a major engineering challenge imposed by the terrain, environmental conditions and isolated nature of the island, with similarly challenging operational issues experienced once the airport was complete. The airport has become the main transport link for St Helena and it is important that those using it can do so with confidence.

The AAIB investigation was instigated by concerns about specific flights which, on enquiry, were not considered to meet the ICAO definition of a serious incident. The initial enquiries did, however, raise sufficient questions about the general situation to warrant continued investigation under the St Helena Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, 2019. In doing so, the investigation only considered the operation of the scheduled carrier currently using the airport and did not involve other aircraft flying there.

The airport itself meets the necessary certification standards, but it is subject to significant environmental effects over which it has no control. These effects were sufficiently severe to have led to the commissioning of the report in 2016 which indicated they could be considerably reduced by making major topographical changes to the local area. These would, however, have been at considerable environmental and financial cost. In the absence of such work being undertaken, the management of the risks involved has instead largely relied on the suitability of the aircraft and operational standards implemented by those flying to the airport.

The operator had adopted procedures to address the specific restrictions imposed. These included flights only being operated by two experienced captains with relevant training to operate to St Helena. This limited the number of pilots available to operate there and both the flight on 17 June and 10 September were operated by the same flight crew.

From discussions held, there appeared a general acceptance that what might not be permitted elsewhere may be justified at St Helena, due to the conditions encountered and the experience of the crews flying there. This included the fact that encounters with windshear warnings on approach did not always lead to a full go-around, but only the application of sufficient power to clear the windshear encounter before continuing the approach and attempting to land. Whilst the operator's Operations Manual allowed an approach to be continued where positive windshear associated with turbulence was encountered, this contradicted the manufacturer's SOPM. Whilst the manufacturer accepted that no specific modelling had been conducted to determine whether the warning system was valid for the specific terrain-induced wind conditions encountered at St Helena, they stated that all windshear warnings must still be treated as genuine and a go-around manoeuvre flown. It was also noted that some of the approaches on 10 September 2023, did not meet the stability criteria yet were continued.

In addition, the approach speeds set for the two flights were lower than expected, based on the forecast and FMS recorded wind conditions, which may have reduced the margin intended to prevent the airspeed dropping below the reference speed during approach. In reality, none of the airspeeds recorded in Tables 1 and 2 fell below the reference speed. Despite the pilot's comment that the speed increments were chosen based on experience of the prevailing conditions, the speeds flown still exceeded those chosen for the approach, and it was evident that the prevailing conditions made controlling the airspeed difficult.

Incorrect autobrake settings were used for both flights, although the combination of autobrake followed by manual braking gave sufficient braking performance to allow the aircraft to slow sufficiently on both landings in the distance available. However, by not using the correct autobrake setting or equivalent manual braking immediately on touchdown, this eroded the safety margins allowed for in the landing performance calculations. This compromised the aircraft's ability to stop safely in the distance available should any of the braking systems have failed after landing, with the potential for severe consequences[6].

The operator ran an FDM programme which should have highlighted all of these points. This would have allowed the operator to take remedial action should they have felt it necessary, however, there were no indications that this had happened.

Footnote

[6] Norwegian Safety Investigation Authority report into an accident to BAE146-200 registration OY-CRG at Stord Airport Norway on 10 October 2006.

The manufacturer gained experience of operating the aircraft type to Saint Helena during their flight trial to the island in December 2016. Whilst they did not encounter some of the more extreme wind conditions prevalent on the island, they reported that reactions to warnings when flying there should be treated no differently to flights elsewhere. In view of the findings of this investigation and the continued challenges presented by the airport, it is considered a review of the current operating procedures would be worthwhile between the operator and manufacturer. This should include a review of the windshear warning system modelling, to ensure its outputs to flight crews are appropriate for the operator's SOPs currently in place.

As such, the following safety recommendation is made.

Safety Recommendation 2026-007:

It is recommended that Embraer reviews operations, based on their flight trial in 2016 and the accumulated operational experience of Embraer E-Jets to St Helena Airport, including modelling of windshear conditions at the airport, in order to ensure appropriate guidance is available to operators of E-Jets using St Helena Airport, and to enable appropriate monitoring by an operator's Flight Data Monitoring programme.

The points raised by the operator with the AAIB which they considered would enhance the safety of their operations to St Helena were passed on to the relevant authorities for consideration.

St Helena Airport has now agreed with ASSI on the provision and installation of runway distance marker boards, which were installed in December 2025. The airport authorities have stated that the AIP will be appropriately amended in September 2026 and the opportunity used to revise the remarks section to include details of the potentially confusing touchdown markings.

As this is still to be done, the AAIB makes the following safety recommendation:

Safety Recommendation 2026-008:

It is recommended that St Helena Airport Limited updates FHSH AD Section 2.9 of the airport's Aeronautical Information Publication, to include a warning of the potential for pilots to mis-interpret their position on the runway due to the short distance between reciprocal Touchdown Zone markings.

Attempts to get wider dissemination of aviation-related weather reports for St Helena through the Luanda-based part of the AFTN have been unsuccessful. Such information sharing would be advantageous to those operating to St Helena and it is hoped that efforts to achieve this continue, despite an imminent solution seeming unlikely. Equally, whilst the inclusion of turbulence and windshear information in TAFs would also be of value, as a civilian airfield, there is not an accepted mechanism for doing so and the Met Office currently provides detailed reports on the wind conditions through other means. At a more local level, the planned installation of better weather monitoring equipment will enable enhanced weather information being passed to aircraft on the approach to St Helena.

Due to its isolation, for planning purposes St Helena was treated as an island destination where a diversion airfield was not a requirement. There were, however, numerous occasions where aircraft were still able to carry sufficient fuel to divert to Ascension Island as the closest available airport and only realistic alternative. As a military airfield, its use by civilian aircraft was restricted, a fact further complicated by the joint use of the airfield by both the UK and US. These points were clearly reflected in the changes implemented to the longstanding Wideawake Agreement on the introduction of civilian flights to St Helena. The provisions made in the agreement for these flights and the possibility of diverting to Ascension Island were pragmatic and straightforward. The failure of their implementation at an operational level seemed to be based on issues for which solutions could be reasonably found.

The ground handling facilities already exist and it seems that there would be only a small chance of a diversion's arrival coinciding with that of another flight requiring handling. Passengers having to remain onboard for a prolonged period of time due to a lack of handling facilities or alternative accommodation, whilst not ideal, also seems far preferable to jeopardising their safety by denying the aircraft the ability to divert in good time in the first place.

The lack of willingness to discuss this matter in detail with the AAIB makes it unclear to what extent a solution to this problem had already been sought with the relevant parties. None of the issues seem insurmountable with the appropriate engagement by those involved. As such, it is considered they should not be used as a reason for denying the use of the airfield as a planned diversion by the RAF, or an acceptance of this position by the operator. Whilst the RAF is responsible for the provision of ground handling facilities under the Wideawake Agreement 2023, it is understood that other parties also bear responsibility for resolving the issue, including any financial implications which may arise. CSOC has indicated that they will liaise with the operator on practical arrangements for managing diversions which is hoped will address these specific barriers. As this is yet to happen, the following safety recommendation is made:

Safety Recommendation 2026-009:

It is recommended that the UK Ministry of Defence Cyber and Specialist Operations Command, in conjunction with scheduled operators to St Helena, ensures there are adequate ground handling resources at Wideawake Airfield to allow its nomination as a diversion airfield, as required under the Wideawake Agreement 2023.

Comment was also made by the RAF that flights to St Helena should simply not depart if the forecast wind conditions were outside the aircraft's limits. Experience dictates, however, that the wind conditions are sufficiently changeable that such a clear judgement on whether to depart or continue beyond the critical en route decision point is often difficult to make.

The introduction of a 55 kt wind limit by the operator has now been made with the intention of providing some form of quantification in this regard, but there appeared to be an acceptance that, on occasion, repeated approaches may still be necessary before encountering a sufficient break in conditions to allow a landing. With no diversion available, this could potentially lead to landing in unfavourable conditions, simply because fuel reserves would dictate a landing was necessary. Whilst aircraft on occasion did carry sufficient fuel to divert to Ascension Island, a crew's decision not to do so may well have been influenced by the fact that the authorities at Wideawake Airfield would not accept being nominated as a planned diversion. Although Wideawake Airfield stated they would accept genuine emergencies, this still created a mindset of it being a destination of last resort, rather than a planned alternative to use before the situation had deteriorated to such a degree that it had become an emergency. Subsequent statements by CSOC that Wideawake Airfield complies with its statutory obligations conflict with other statements made by the airfield operators that is not available as a diversion. It may reflect a consideration by CSOC that accepting flights experiencing an emergency is the same as accepting an aircraft choosing to divert for operational reasons in order to prevent an emergency situation arising. The provisions laid out in the Wideawake Agreement are clear and their imposition should be equally clear to those affected. In view of this, the following safety recommendation is made:

Safety Recommendation 2026-010:

It is recommended that the UK Ministry of Defence Cyber and Specialist Operations Command allows aircraft operators flying to St Helena to nominate Wideawake Airfield as a diversion airfield, in accordance with provisions outlined in the revised 'Civil Use of Wideawake Airfield' agreement of 2023.

Despite the stated good levels of co-operation between the airports at St Helena and Ascension, it would be prudent for both organisations to have written procedures in place to ensure any diversion from St Helena can be handled effectively. Whilst St Helena airport's MATS contained some information in this regard, it lacked sufficient detail. For this reason, the following safety recommendation is made:

Safety Recommendation 2026-011:

It is recommended that St Helena Airport agrees with the UK Ministry of Defence Cyber and Specialist Operations Command, and records, procedures to effectively handle aircraft diverting to Wideawake Airfield from St Helena, to ensure diversions from St Helena are handled safely and expeditiously.

St Helena Airport presents a particularly challenging operating environment. This investigation revealed an acceptance by many of the parties involved of the current situation, extending to comments by some in positions of authority indicating that there was not a full understanding of the potential safety issues and aviation protocols intended to mitigate these. Although the investigation highlights a number of individual points, it is considered that together they highlight the need for a more in-depth study to assess existing risks and identify potential mitigations. Given St Helena Airport has now been open for nearly ten years there should be sufficient data and operational experience to support this. Such a study should include those with relevant experience, such as regulators, airline and airport operators, manufacturers and government departments. Under its responsibility for managing the State Safety Programme for St Helena, in 2025 ASSI developed a risk analysis tool using the Bow Tie safety model for St Helena Airport. ASSI, however, stated that it was not in a position to conduct a wider review of operations to the airport as it did not have the remit to engage with military airfields or overseas-based operators, considered necessary to make such a review effective. In light of this, it is considered that the task of undertaking such a review is best achieved by Aviation Policy within the Department for Transport. The following safety recommendation is therefore made:

Safety Recommendation 2026-012:

It is recommended that the Department for Transport oversees a review of operations at St Helena Airport, including relevant parties, to identify continuing risk factors and suitable mitigations.

Safety actions taken

The following safety actions have been taken since the start of the investigation:

- Installation by St Helena Airport of runway distance marker boards, to provide additional information to pilots on landing.
- Routine recording by St Helena Airport of go around occurrences, including a summary of the weather conditions at the time, to better enable future operational decisions to be based on past conditions.
- Introduction by the operator of a 55 kt runway mid-point maximum wind limit for dispatch to St Helena Airport, based on operational experience.

Conclusion

The events reported to the AAIB, whilst not meeting the ICAO thresholds of a Serious Incident or Accident, demonstrated that environmental factors present challenging conditions for the operation of the commercial air services on which St Helena relies. The variable wind conditions and topography at the island's new airport frequently result in windshear, making the final approach and touchdown on the runway challenging, often resulting in a go-around being required.

The investigation found that the operator had procedures in place to try and mitigate these issues and there appeared a general perception from several parties that the current operation was perfectly acceptable. The evidence, however, was that risks remained.

Despite agreements indicating that, where aircraft carried sufficient fuel to divert, the operator could, and should, nominate Wideawake Airfield at Ascension Island as a diversion when flight planning, in practice it was prevented from doing so. Whilst it was stated that flights would have been accepted in an emergency, this situation is considered likely to have contributed to pilots making multiple approaches to St Helena, rather than divert when the aircraft fuel state allowed and when faced with consistently unfavourable wind conditions. A number of safety improvements have now been made and the additional safety recommendations raised by this report are intended to bring about further improvements to enhance the safety of operations to St Helena into the future.

Appendix 1: Weather forecast for 17 June 2023

Met Office

Detailed forecast Saturday, 17 June 2023

(All heights AGL and all wind directions deg True)

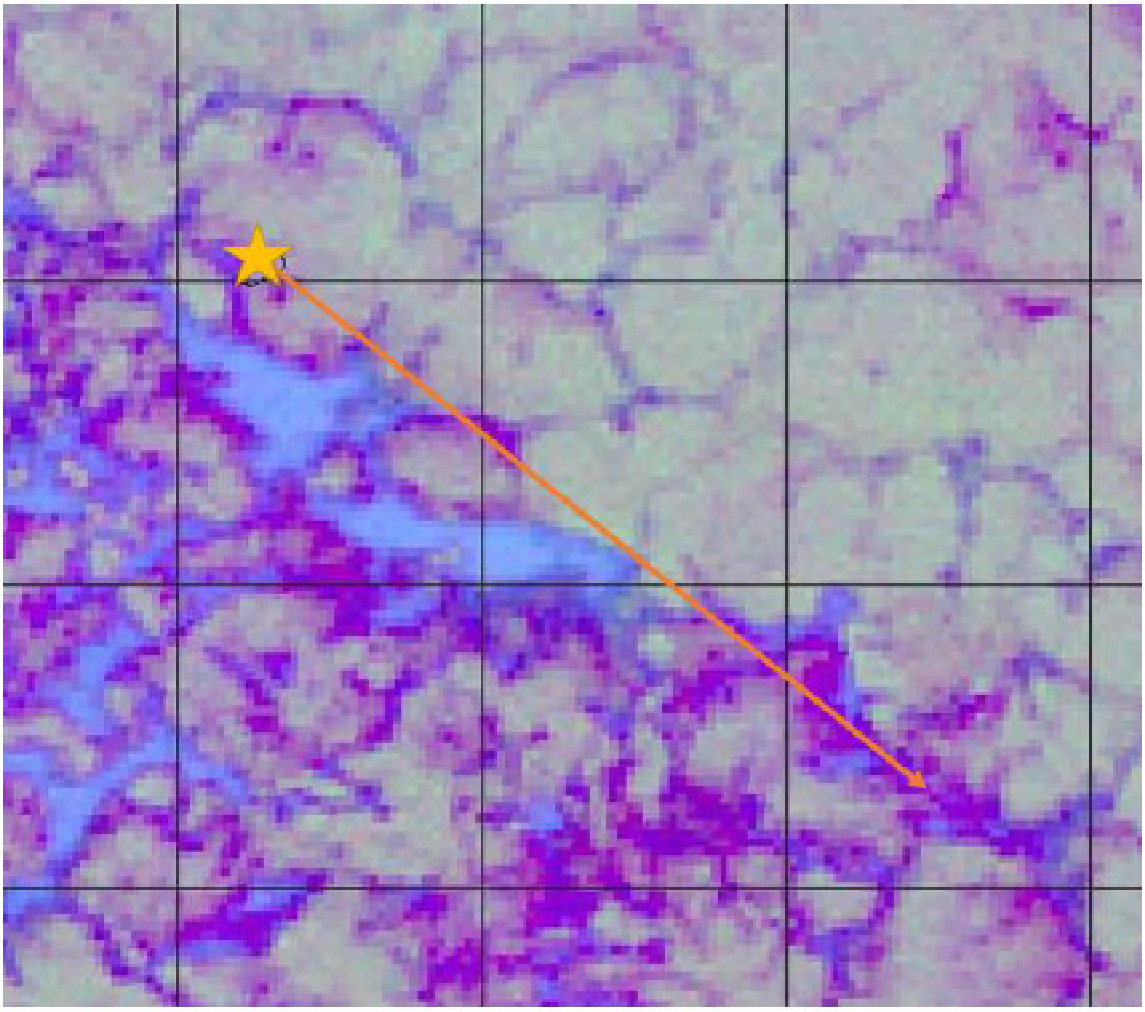
Issued 0430Z Saturday, 17 June 2023

Summary: The 2000FT wind is very slightly stronger and veered. The risk of showers has red slightly.

Between the hours of 0800-1600 Z:

The 2000FT wind away from the influence of the island is 120-125° 10-20.

The image shows the satellite from 0330Z. The yellow star marks St Helena with the orange arrowl showing ETA. The satellite currently shows a layer of stratocumulus cloud with isolated showers for I



Met Office

Detailed forecast Saturday, 17 June 2023

(All heights AGL and all wind directions deg True)

		0800-1000 Z	1000-1200 Z	1200-1400 Z	1400-1600 Z
BKN Cloud Base **<2500 FT**	Persistent	ML	ML	ML	ML
	TEMPO	M	M	M	M
BKN Cloud Base **<800 FT**	Persistent	L	L	L	L
	TEMPO	ML	ML	ML	ML
Visibility **<1000 M**	Persistent	I	I	I	I
	TEMPO	L	L	L	L
X-wind RWY19 >35 KT		M	M	M	M
Tailwind RWY01 >10 KT		H	H	H	H
SEV Turb RWY19		M	ML	ML	ML

Risk percentages: N – <5%, L – 5-29%, ML – 30-39%, M – 40-49%, H – >50%
*conditions expected to last >1 hour; ^conditions expected to last <1 hour at a time.

DRAFT TAF at time of writing. Note this is subject to change and should be used for planning purposes only.

1706/1715 16018G32KT 9999 FEW010 BKN030

TEMPO 1706/1715 VRB18KT

PROB30 TEMPO 1706/1715 4000 SHRA BKN008=

Detailed wind forecast (for the period 0800 to 1600Z):	
RWY 19:	160 (varying 130-180) 17-21 gusting 30-36 KT H risk VRB 18 KT L risk of gale
RWY mid-pt:	140 29-32 gusting 39-44 KT
RWY 01:	130 13-14 gusting 18-20 KT
RWY 19 wind shear:	MOD/SEV

Met Office St Helena Airport will provide TAFs, forecast updates, and issue any airfield warnings as required. Forecast consultancy is available via telephone, radio or in person at St Helena Airport

Issued: 17/06/23 Duty Meteorologist, Met Office St Helena Airport

Appendix 2: Weather forecast for 10 September 2023

Met Office

Detailed forecast Sunday, 10 September 2023

(All heights AGL and all wind directions deg True)

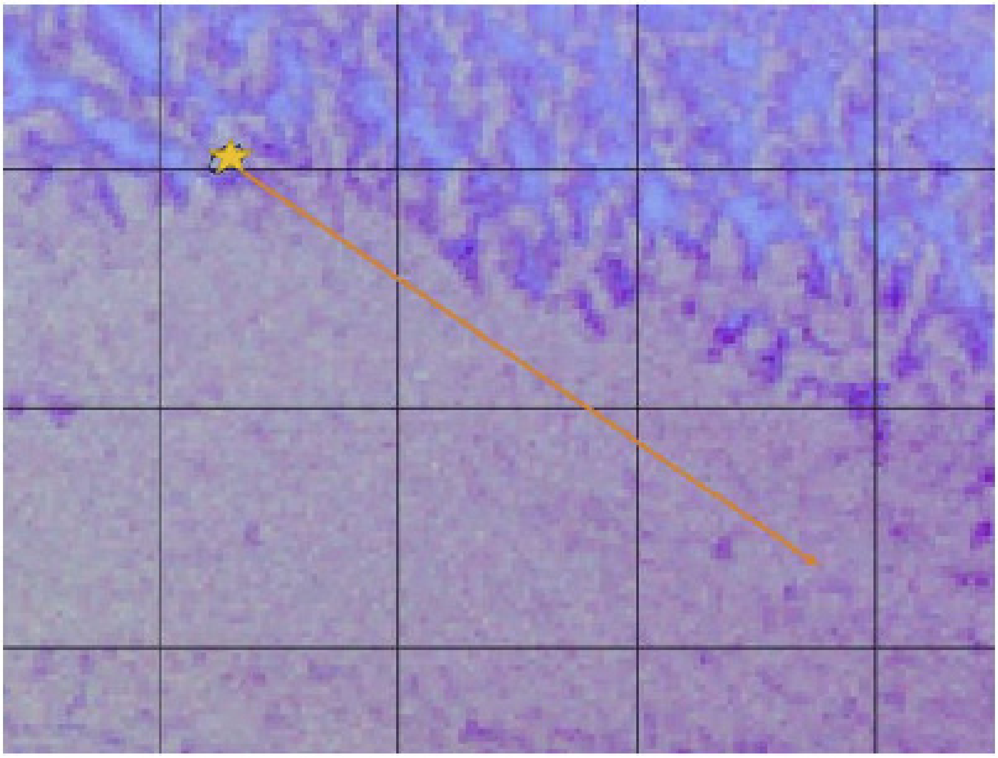
Issued 0725Z Sunday, 10 September 2023

Summary: The winds have strengthened slightly. There is now a low risk of showers for FTA.

Between the hours of 0800-1600 Z:

The 2000 FT wind away from the influence of the island will be 120-125° 27-29 KT.

The satellite image from 0700Z today with the orange arrowhead showing FTA 1330Z. A band of showers passed over the airfield overnight, with a stratocumulus sheet following, which is expected for FTA. There is a low risk of showers underneath this cloud, or showers developing through the day, but this is unlikely.



		0800-1000 Z	1000-1200 Z	1200-1400 Z	1400-1600 Z
BKN Cloud Base <1800 FT	Persistent	M	M	ML	ML
	TEMPO	H	H	H	H
BKN Cloud Base <800 FT	Persistent	L	L	L	L
	TEMPO	ML	ML	ML	ML
Visibility	Persistent	L	L	L	L

Met Office St Helena Airport will provide TAFs, forecast updates, and issue any airfield warnings as required. Forecast consultancy is available via telephone, radio or in person at St Helena Airport.

Issued: 10/09/23 Duty Meteorologist, Met Office St Helena Airport

Met Office

Detailed forecast Sunday, 10 September 2023

(All heights AGL and all wind directions deg True)

<1000 M	TEMPO	MI	MI	I	I
X-wind RWY19 >38 KT		M	M	M	M
Tailwind RWY01 >10 KT		H	H	H	H
SEV Turb RWY19		H	H	H	H

Risk percentages: N = <5%, L = 5-29%, ML = 30-39%, M = 40-49%, H = >50%.
*conditions expected to last >1 hour; ^conditions expected to last <1 hour at a time.

DRAFT TAF at time of writing. Note this is subject to change and should be used for planning purposes only.

TAF FHSH 1009/1018 16030G48KT 9999 FEW012 BKN020

TEMPO 1009/1018 SCT008 16038G60KT BKN012

PROB30 TEMPO 1009/1011 0300 SHRA FG BKN000

PROB40 TEMPO 1009/1018 VRB30G48KT

PROB30 TEMPO 1011/1018 –SHRA SCT002 BKN006=

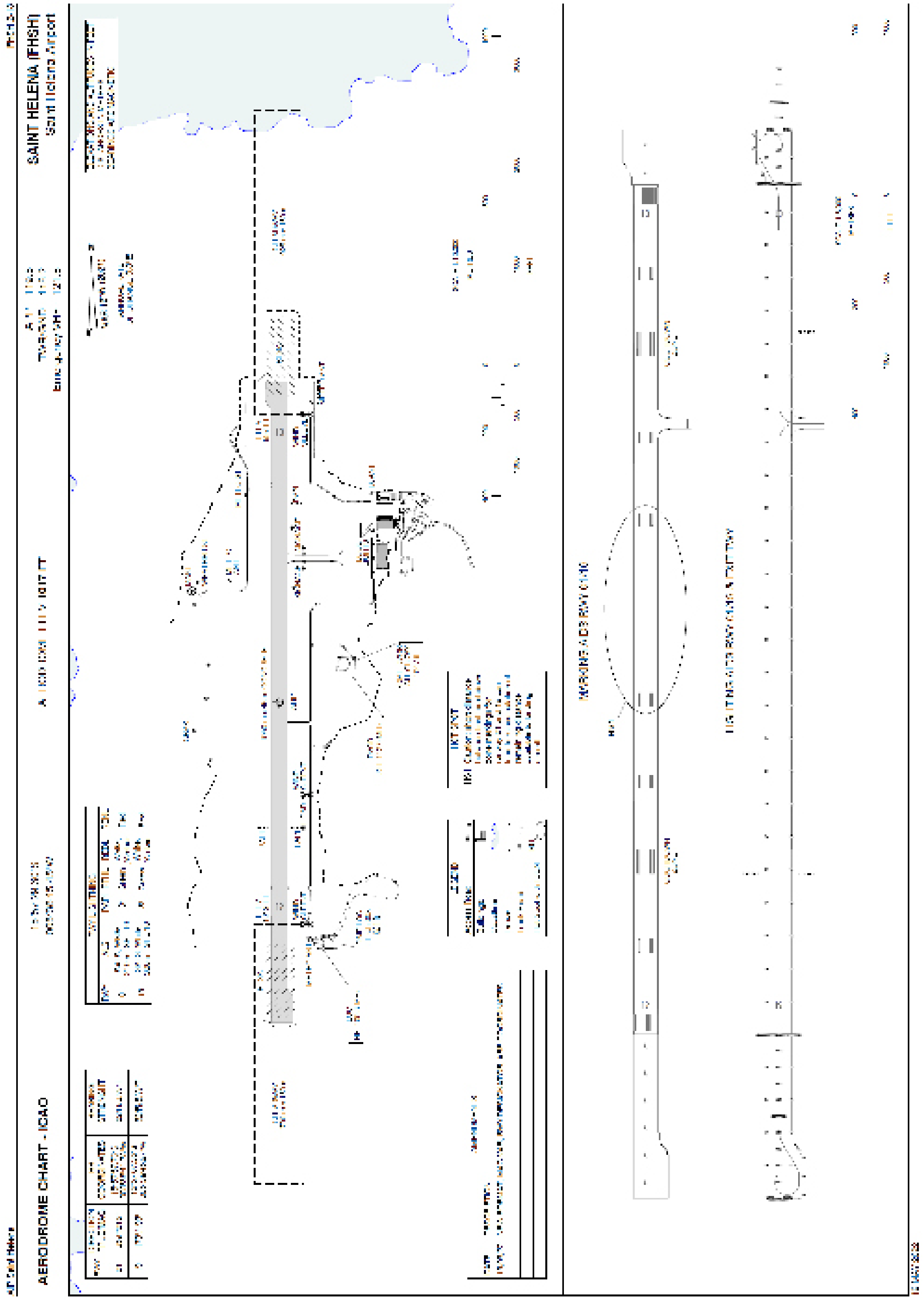
Detailed wind forecast (for the period 0800 to 1600Z):	
RWY 19:	160 (varying 130-210) 28-35 gusting 42-50 KT M risk VRB 30 gusting 48 KT ML risk 160 38 gusting 58 KT
RWY mid-pt:	140 42-48 gusting 55-65 KT
RWY 01:	130 17-19 gusting 24-27 KT
RWY 19 wind shear:	SEV

Met Office St Helena Airport will provide TAFs, forecast updates, and issue any airfield warnings as required. Forecast consultancy is available via telephone, radio or in person at St Helena Airport.

Issued: 10/09/23

Duty Meteorologist, Met Office St Helena Airport

Appendix 3: St Helena Aerodrome AIP Chart



Published: 16 July 2026.

Accident

Aircraft Type and Registration:	Jodel D18, G-BODT	
No & Type of Engines:	1 Rotax 912-UL piston engine	
Year of Manufacture:	1988 (Serial no: PFA 169-11290)	
Date & Time (UTC):	27 October 2025 at 1350 hrs	
Location:	Portmoak Airfield, Kinross	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Fatal)	Passengers - N/A
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	81 years	
Commander's Flying Experience:	Approximately 700 hours (of which around 250 were on type) Last 90 days - Unknown Last 28 days - Unknown	
Information Source:	AAIB Field Investigation	

Synopsis

During the takeoff ground roll from Portmoak Airfield, the aircraft yawed sharply to the right. After becoming airborne, while still yawed, it then rolled to the right and entered a descending turn. Approximately six seconds after takeoff the aircraft struck the ground in a field to the north of the runway. The aircraft was destroyed and the pilot was fatally injured. No mechanical or technical defects were identified which would have prevented normal control of the aircraft. It is possible that the pilot suffered either a partial or complete incapacitation during the takeoff roll.

History of the flight

On the day of the accident, the pilot drove to the airfield with the intention of conducting a short, local area flight. He prepared the aircraft and taxied from the hangar to the takeoff end of the runway. He made a brief radio call to announce that he was going to take off from Runway 28R which was heard by several glider pilots who were operating on the southern area of the airfield.

A CCTV camera mounted to a local building overlooking the airfield captured the takeoff and subsequent accident. The camera is approximately 250 m from the accident site, and it was not possible to observe details of G-BODT such as control positions although the general attitude and direction of the aircraft was clear. The footage shows the aircraft pause at the beginning of the runway for a few minutes, presumably to perform pre-takeoff power checks before lining up on the runway. It then commenced its takeoff roll. The tailwheel lifts off from the ground and a few seconds later appears to make contact with the ground again. During the final section of the ground roll, the aircraft deviated sharply to the right. Despite the deviation, the aircraft continued to accelerate and became airborne. Immediately after lifting off, the aircraft continued to yaw to the right and did not realign with the original takeoff heading. Within seconds the aircraft began to roll to the right while climbing only slightly. The rate of roll then increased rapidly, and the aircraft descended in a tightening right turn. Approximately six seconds after leaving the ground the right wingtip struck the ground followed by the nose of the aircraft. Figure 1 shows a composite photo taken from the CCTV footage.

Figure 1

Composite CCTV image G-BODT, arrow shows flight direction

Witnesses reported that engine power sounded normal and continuous throughout the takeoff.

Accident site

The aircraft came to rest in a field adjacent and to the north of Runway 28R, approximately 95 m from the edge of the grass runway. Ground marks showed the right wingtip struck the ground first, followed by the propeller and then the canopy. Clear propeller strikes in the ground and the location of a propeller blade tip 65 m from the strikes suggested propeller rotation at the time of impact and that the engine was producing high power. The aircraft travelled a further 30 m before coming to rest. Separation of the fuselage from both the wing structure and the engine indicated a dynamic impact sequence that included inversion.

Aircraft information

The Jodel D18 is a low-wing two seat aircraft fitted with a tailwheel. It is a plans-built aircraft, of wood construction with fabric covering. The aircraft was built in 1988, had accrued 1,888 flying hours, and had a valid Permit to Fly.

G-BODT was equipped with a Rotax 912-UL engine and three-bladed Ivoprop in-flight electrically adjustable pitch propeller. Pitch adjustment is made using a sprung toggle switch on the instrument panel, requiring constant pressure to hold the switch in the FINE or COARSE positions to adjust the propeller pitch. The switch self-centres after releasing pressure, and the propeller remains in the selected pitch. The propeller rotates clockwise, as viewed from the rear.

Aircraft examination

Engine and propeller

The engine and engine controls were severely damaged during the accident sequence, although some inspection was possible. The throttle control was found fully open, and the friction adjustment was at a tight setting. There was control continuity between the throttle and mixture controls to both carburettors. Oil and coolant were both present and the spark plugs were in good condition. The fuel tank was damaged but intact and contained just over 30 litres of Mogas.

The propeller sustained substantial damage. The composite outer surfaces of all three blades had detached from the hub as well as from their adjustable pitch rods, which were deformed. The pitch adjustment switch had self-centred.

Airframe

The airframe was significantly disrupted, having come to rest with the wing structure detached from the fuselage. The outer section of the right wing had separated from the rest of the wing structure, which was largely undamaged. The tailplane and rudder were attached to the fuselage and remained intact. The engine, engine mounting structure and cockpit instrument panel were no longer attached to the fuselage and had turned through 90°. The canopy transparency and frame had been destroyed, and all parts were found at the accident site.

Flying Controls

Continuity between the ailerons, elevator, and elevator trim tab with their respective controls was established with no physical restrictions within the control runs. The rudder pedals were connected to the combined rudder/tail wheel steering mechanism with no physical restrictions and with correct sense of movement for left/right control input. The elevator trim adjustment knob was found in the fully NOSE UP position, but due to airframe disruption introducing tension into the control cables, exact positions of any of the surfaces at the time of the accident could not be confirmed.

Landing gear

Both main landing gear wheels were free to rotate within their spats, and the tyres were in good condition. The brake cables were attached between the actuating lever in the cockpit, and the brake assemblies on both mainwheels. Each brake was able to be manually actuated and released. Both main landing gear oleo struts demonstrated free movement. The solid tailwheel was undamaged.

Survivability

Both left and right seats were fitted with three-point fixed harnesses. These comprised a two-part lap strap and a shoulder restraint strap, which fastened into a single buckle. The airframe attachment points of the left harness all showed significant disruption, indicating they had been subjected to shock loading and therefore that the pilot had been wearing the harness including the shoulder strap. First responders found the pilot partially underneath the disrupted front of the aircraft, secured by his harness. Both sides of the left seat lap strap had been cut to release the pilot during the emergency response. The right seat harness was intact and buckled.

Pilot

Experience and medical

The pilot achieved his NPPL in 2006 and flew several tailwheel aircraft. He had extensive experience flying G-BODT which he had flown since 2007. He held a Pilot Medical Declaration valid until January 2026; he also held a current Heavy Goods Vehicle (Group 2 licence) medical certificate. The pilot had previously suffered a myocardial infarction[1] and had been diagnosed with Type 2 diabetes[2]. He was in an age group where chronic cardiovascular and metabolic conditions are common, and where prescribed treatment is typically aimed at risk reduction and disease stabilisation rather than cure.

The post-mortem results did not reveal any obvious cause of either a partial or complete incapacitation. The pathologist noted the history of heart disease and commented that in the absence of any other explanation for the accident that it was possible that the pilot may have experienced a cardiac arrhythmia[3].

Incapacitation

Incapacitation may be partial or complete. In cases of partial incapacitation, a pilot may retain the ability to operate the aircraft but experience an impairment of judgement or decision-making capability. Such impairment may arise from medical causes or from human performance factors, including fatigue, hydration, or nutrition. In these circumstances, a pilot may act in a manner that is inconsistent with the situation or with their level of experience.

Footnote

1 A myocardial infarction (MI), commonly known as a heart attack, is heart muscle damage caused by a sudden blockage of blood flow in a coronary artery.
2 Not medicated – controlled via diet.
3 Cardiac arrhythmia refers to an abnormal heart rhythm – meaning the heart may beat too fast, too slow, or irregularly.

Airfield information

Portmoak Airfield is located approximately 20 miles north of Edinburgh. On the day of the accident, gliding was taking place on the southern area using Runway 28L. The northern area was for all other powered operations (Figure 2).

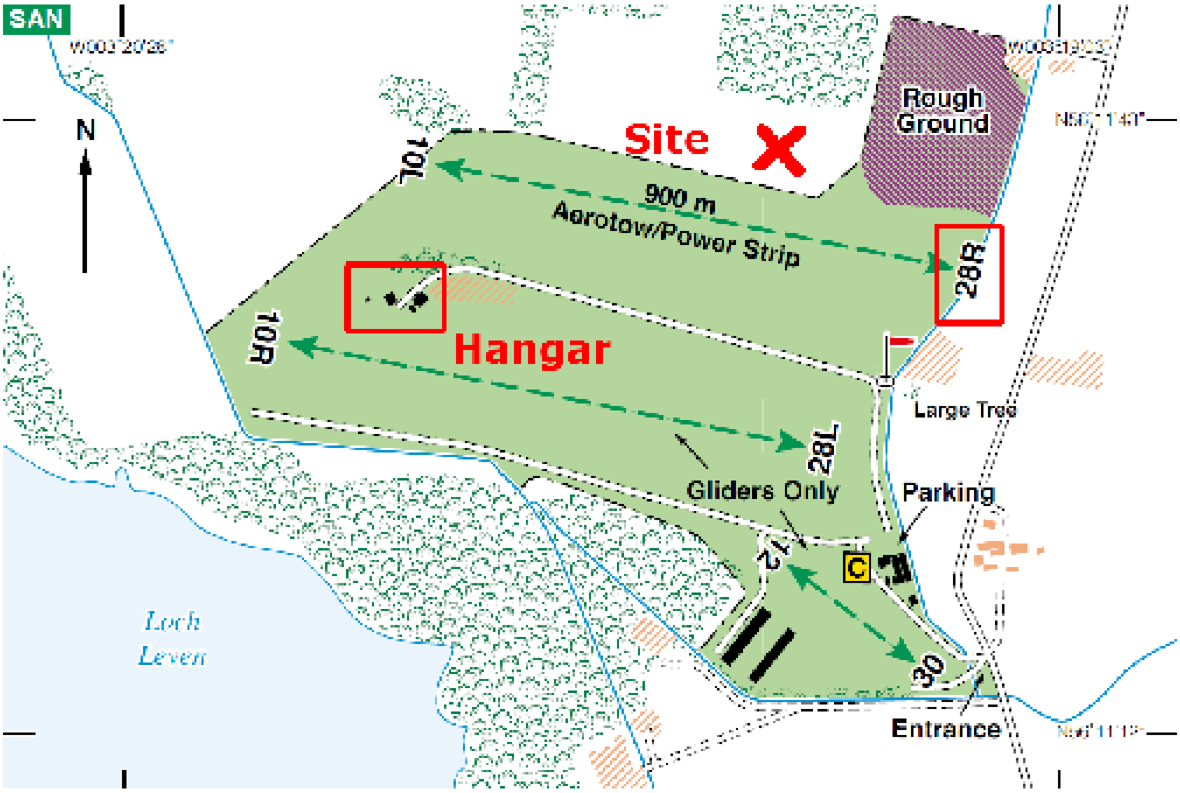


Figure 2
Portmoak Airfield ©Robert Pooley

At the time of the accident the wind recorded at the airfield was from the north-west, at a maximum of 12 kt. The weather was clear and temperature 10°C.

Yaw effects of a propeller on takeoff

A single engined propeller-driven aircraft has a natural tendency to yaw during the takeoff run. In tailwheel aircraft, this effect can be pronounced due to the aircraft attitude, and the additional propeller related effects present during the early stages of the takeoff run. Figure 3 illustrates the effects which are described.

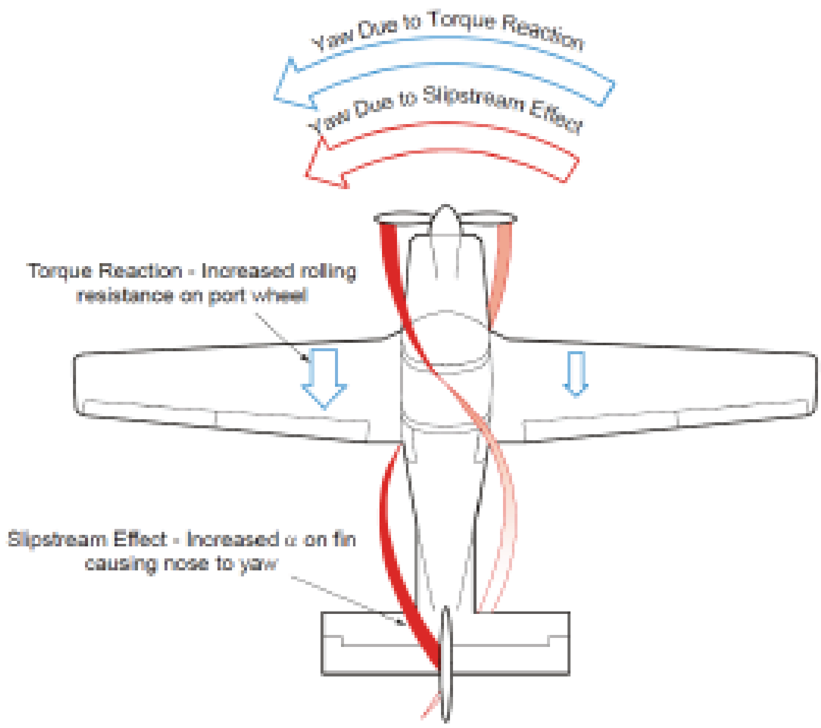


Figure 3

Effects of a clockwise rotating propeller from AP3456[4]

For an aircraft fitted with a clockwise-rotating propeller like G-BODT, several aerodynamic and mechanical effects act simultaneously to produce a yawing tendency to the left. The spiralling slipstream generated by the propeller strikes the fin and rudder, applying a lateral force that displaces the tail to the right and causes the aircraft to yaw left. In addition, the torque reaction generated by the propeller imposes an increased load on the left mainwheel while the aircraft remains on the ground. The propeller also behaves as a gyroscope, such that changes in propeller disc attitude during the takeoff run result in a shortlived yawing moment to the left as the pilot pitches forward to lift the tail, and to the right during rotation, due to gyroscopic precession. Balancing these changing forces will take awareness and skill.

Finally, where the propeller disc is inclined to the airflow, asymmetric blade effect causes the downgoing blade to produce greater thrust than the upgoing blade. For a clockwise rotating propeller, this imbalance results in increased thrust on the right side of the disc and a corresponding yaw to the left.

Collectively, these effects act in the same direction, producing a cumulative left yawing tendency which must be countered by pilot control input.

Footnote

[4] AP3456, *The Aerodynamics of Flight*, UK Ministry of Defence. Slipstream Effect and Torque Reaction. Propeller Rotating Clockwise (viewed from the Cockpit).

Analysis

Engineering

Control continuity was established between the flying control stick, rudder pedals, and all control surfaces. No physical restrictions were identified that could have prevented the pilot from controlling the aircraft.

No mechanical defects were found with the engine or engine controls. The propeller ground marks, damage to blades and distance of propeller pieces found from the ground marks indicates that the engine was producing high power at the time of striking the ground.

The damage sustained to the right outer wing section is commensurate with the right wingtip striking the ground first, followed by a dynamic impact sequence including inversion which resulted in the separation of the engine, front bulkhead/instrument panel and the fuselage from the main wing structure. All pieces of the canopy were found within the area of ground marks, indicating that it was closed and present with the aircraft.

Flight profile

The CCTV showed that immediately before leaving the ground, the aircraft yawed to the right which continued after the aircraft became airborne. This yaw resulted in the aircraft beginning to roll to the right with an increasing angle of bank and the nose dropping. Although it is not possible to observe the control surfaces due to the aircraft being some distance from the CCTV camera, there is no evidence on the footage of the aircraft beginning to recover from the high angle of bank before it struck the ground.

Possible incapacitation

Although the postmortem did not find any evidence of an event that could have caused an incapacitation, the pilot had a number of medical issues both current and historic. The pathologist raised the possibility of a heart arrhythmia which could have rendered the pilot unable to control the aircraft at a critical moment. Given the pilot's experience both with tailwheel aircraft and on G-BODT, the flight profile did not match his skill level nor any usual flight profile on takeoff. However, the yaw of the aircraft to the right on takeoff would not occur on an aircraft with a clockwise rotating propeller such as was fitted to G-BODT without a pilot input.

Incapacitation can be complete or it can be only partial, leaving a pilot partly aware and capable but not completely able to control or fly an aircraft. Given the lack of any technical malfunction that could explain the departure from controlled flight, it is possible that the pilot was incapacitated to some degree and was unable to either stop the aircraft or exert directional control either before or after takeoff.

Conclusion

The aircraft became airborne while yawed to the right and did not realign with the runway heading after takeoff. The right yaw developed into a right roll and descending turn, and the flightpath continued until the aircraft struck the ground. The post-accident examination did not identify any mechanical or control system defects that would have prevented normal operation of the aircraft.

The pilot was experienced on tailwheel aircraft and on this particular aircraft. The observed takeoff profile was not consistent with expected handling for an aircraft of this type operated by an experienced pilot. Although the postmortem examination did not identify a definitive medical cause, it was not possible to exclude the possibility that the pilot experienced a sudden or partial incapacitation at a critical stage of the takeoff.

Published: 16 July 2026.

AAIB Correspondence Reports

These are reports on accidents and incidents which were not subject to a Field Investigation.

They are wholly, or largely, based on information provided by the aircraft commander in an Aircraft Accident Report Form (AARF) and in some cases additional information from other sources.

The accuracy of the information provided cannot be assured.

Accident

Aircraft Type and Registration:	Skyranger Swift 912S(1), G-MLZZ	
No & Type of Engines:	1 Rotax 912ULS piston engine	
Year of Manufacture:	2007 (Serial no: BMAA/HB/557)	
Date & Time (UTC):	24 April 2026 at 1740 hrs	
Location:	Balado Airfield, Kinross	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (Minor)	Passengers - None
Nature of Damage:	Aircraft destroyed by fire	
Commander's Licence:	National Private Pilot's Licence	
Commander's Age:	70 years	
Commander's Flying Experience:	429 hours (of which 34 were on type) Last 90 days - 8 hours Last 28 days - 4 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

During a flight, the pilot was alerted to the presence of high levels of carbon monoxide by his active detector. Having taken action to increase the ventilation, he landed at the nearest airfield. During the approach the engine began to fluctuate in power and stopped just after landing. After attempting to restart the engine, the pilot noticed smoke and then flames from under the cowls. The aircraft was consumed by fire. The cause of the carbon monoxide and the fire was not established.

History of the flight

The pilot was flying from Laurencekirk Airfield, Aberdeenshire to Strathaven Airfield, South Lanarkshire. On takeoff the pilot heard what he described as an unusual engine noise, but he elected to continue the flight as it was not associated with a noticeable loss of power or abnormal indications.

When the aircraft was to the south-west of Dundee around 40 minutes into the flight, the pilot was alerted to the presence of carbon monoxide by his active detector. He noted that there was still no change in engine performance and no visual sign, taste or smell of anything amiss in the cabin. The detector, which had a digital display in parts per million (ppm), was now reading 465 ppm so the pilot decided to land at the nearest airfield, Balado. He opened both windows and flew sideslipped to improve the ventilation and the reading reduced to 190 ppm as a result.

On approach to Balado the engine power began to fluctuate, and this resulted in what the pilot described as a "hard landing". The engine finally stopped whilst he was vacating the runway onto the taxiway. He made several attempts to restart the engine but whilst it would turn over, it would not catch and run. He observed that there was smoke beginning to appear from under the cowls and, when he vacated the aircraft to look, he could see flames. Although the pilot and another person at the airfield gathered some extinguishers, they felt it was too dangerous to approach the aircraft as the flames had by then taken hold. By the time the local fire service arrived to extinguish the remaining fire, the aircraft had been destroyed.

Carbon monoxide

Carbon monoxide is a colourless, odourless and tasteless gas produced by the incomplete combustion of carbon-based fuels. When inhaled, it enters the bloodstream and binds with haemoglobin in red blood cells to form carboxyhaemoglobin. This reduces the blood's ability to carry oxygen. Early symptoms of exposure can include headache, dizziness, drowsiness, nausea, fatigue, and confusion. More severe exposure may result in visual disturbance, shortness of breath, abdominal pain, and loss of consciousness. The normal background level of carbon monoxide would be between 0 – 9 ppm.

In light aircraft, a common source of carbon monoxide exposure is exhaust gas leakage into cabin heating systems that use air passed over the engine's exhaust manifold. Cracks, corrosion, or failed seals in the exhaust system can allow fumes to enter the cabin, creating a significant safety risk to occupants. The CAA have produced a Safety Sense Leaflet[1] on carbon monoxide which contains extensive details and advice for pilots.

Active carbon monoxide detector

The pilot always carried an active carbon monoxide detector with him when he flew. He had previously experienced a carbon monoxide leak in another aircraft and had found the active detector a vital tool in recognising the leak before he was affected. He noted that in this case the alarm was clearly audible, even through his headset. Although the detector had a digital readout in ppm, the pilot was unsure of what levels should be considered dangerous and at what point he would need to react.

The Safety Sense Leaflet suggests that 50 ppm, which is the threshold at which many active detectors start alerting, to be an '*appropriate threshold that minimises excessive low-level alerting whilst also giving the pilot time to respond to a CO event.'*

Actions to take for carbon monoxide

The Safety Sense Leaflet suggests that the pilot take action straight away in the event of the alert sounding in the air or on the ground and that these actions should include turning off the heat supply and maximizing fresh air into the aircraft. If the aircraft is airborne then the leaflet suggests landing as soon as possible rather than waiting for the situation to get

Footnote

1 https://www.caa.co.uk/media/xs5axnpi/safety-sense-leaflet-34.pdf [accessed May 2026].

worse. If pilots are experiencing symptoms of carbon monoxide poisoning or if the readings are persistently high, then an off-airfield landing should be considered.

The pilot of G-MLZZ commented that opening both windows and sideslipping the aircraft to increase the ventilation had a significant effect on the level of carbon monoxide indicated on the alarm. The aircraft's pitch attitude and airspeed also affected the level of carbon monoxide in the cabin.

Other information

The cause of the carbon monoxide and the fire in the engine after landing was not determined.

Analysis

During a flight from Laurencekirk to Strathaven the pilot was alerted to the presence of a very high concentration of carbon monoxide by his active detector. He took immediate action to divert to the nearest airfield and increase the ventilation in the cabin. The engine began to fluctuate on approach to Balado, and the variation in power lead the aircraft to land heavily. The engine stopped completely shortly after landing. After making a number of attempts to restart the engine, the pilot noticed smoke appearing from under the cowls. By the time he had vacated the aircraft, flames were visible and shortly afterwards the aircraft was lost to the fire.

The pilot’s active carbon monoxide detector was reading 465 ppm at its maximum although the pilot’s actions, to open the windows and sideslip the aircraft, increased the ventilation which reduced this significantly. The CAA in their Safety Sense Leaflet suggested that a pilot should take action as soon as the alert sounds, which for most alarms is around 50 ppm. This action should include landing as soon as possible.

The pilot reported that during the flight the engine was operating normally and there were no abnormal indications or sounds. He also commented that there was no smell, taste or visual signs of anything amiss in the aircraft. Without the carbon monoxide detector, it is unlikely that he would have been aware of any abnormality before the engine power began to fluctuate. By this time, with the very high level of carbon monoxide, it is possible that he may well have been affected and this may have then compromised his ability to fly the aircraft and manage the emergency.

Conclusion

During a flight from Laurencekirk to Strathaven, the pilot was alerted to high levels of carbon monoxide by his active detector. Having taken action to increase the ventilation in the aircraft, the pilot diverted to the nearest airfield. During the approach the engine power began to fluctuate, and it finally stopped just after landing. The engine began to emit smoke and flames, and eventually the aircraft was consumed by fire. The cause of the carbon monoxide and the fire was not established.

The pilot became aware of the high levels of carbon monoxide through his active detector as there was no smell, taste or visual sign of any issues and the engine was at that time performing normally. Had he not been alerted, it is possible that his exposure to high levels of the gas may have meant he was not able to deal with the subsequent emergency.

Accident

Aircraft Type and Registration:	UAS Skymagic X245
No & Type of Engines:	4 x electrical brushless motors
Year of Manufacture:	2021
Date & Time (UTC):	23 March 2026 at 0247 hrs
Location:	London Eye Pier, Greater London
Type of Flight:	Commercial Operations (UAS)
Persons on Board:	Crew - None Passengers - None
Injuries:	Crew - N/A Passengers - N/A
Nature of Damage:	Multiple Unmanned Aircraft (UA) destroyed
Commander's Licence:	Other
Commander's Age:	30 years
Commander's Flying Experience:	48 hours (of which 25 were on type) Last 90 days - 10 hours Last 28 days - 4 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

During a night-time rehearsal of a UAS light display over the River Thames, several UAs within a swarm experienced degraded positional accuracy, while operating in close formation near the London Eye. Two UAs descended out of control early in the flight and, later in the sequence, five additional UAs collided during a programmed transition and fell into the river. No injuries were reported, and the UAs were not recovered.

The operator determined that several UAs had reverted to a lower-accuracy positioning mode during the flight, resulting in positional drift within the swarm. Post-flight examination indicated that the Real-Time Kinematic (RTK) base station antenna used to enhance UA position sensing may have been partially obscured.

The operator reported that the RTK antenna height had subsequently been increased with additional checks introduced to ensure an unobstructed signal and a stable RTK fix prior to flight.

AAIB Record-Only Investigations

This section provides details of accidents and incidents which were not subject to a Field or full Correspondence Investigation.

They are wholly, or largely, based on information provided by the aircraft commander at the time of reporting and in some cases additional information from other sources.

The accuracy of the information provided cannot be assured.

Record-only investigations reviewed: May - June 2026

21 May 2025 **Vans RV-6** **G-BZWZ** Hodenhagen Airfield, Germany

On approach, the aircraft encountered gusty conditions, increasing in severity during the final 50 ft. A late go-around was initiated, but the aircraft mainwheels touched down and the right wing lifted. The aircraft departed the left side of the runway and ground looped, coming to rest on its nose.

6 Apr 2026 **PIK 20E** **G-OPIK** Sutton Bank Airfield, Yorkshire

On the takeoff roll, the propeller detached from a self launching motor glider, which then came to a stop on the runway before getting airborne. The loss of propeller was attributed to the failure of a locking-washer tab retaining the propeller nut. The propeller did not collide with any other aircraft or third parties.

2 May 2026 **Piper PA-32R** **N73BL** London Elstree Aerodrome, Hertfordshire

The aircraft landed with one main landing gear retracted and veered off the side of the runway before coming to a halt. It was subsequently found that a bolt had come loose in the landing gear assembly and caught on the aircraft structure, preventing the landing gear from lowering.

6 May 2026 **Cessna 152** **G-CINA** Sibson Aerodrome, Cambridgeshire

Following a solo cross-country, the student pilot experienced a bounced landing during which the propeller contacted the ground and the nose landing gear collapsed.

12 May 2026 **Piper PA-34-200T** **G-BOUK** Retford Gamston Airport, Nottinghamshire

The aircraft touched down approximately half way down the runway and failed to stop before reaching the end of the runway. The aircraft came to a halt in agricultural land. When the pilot attempted turn the aircraft and return to the runway, the nose landing gear collapsed.

15 May 2026 **Piper PA-28-161** **G-BZIO** White Waltham Airfield, Berkshire

The aircraft bounced on landing and nose gear collapsed.

15 May 2026 **Piper PA-28-181** **G-BRME** Stow Maries Great War Aerodrome, Essex

The pilot was not familiar with the aerodrome but obtained a briefing before departure and then made two passes of the aerodrome before making an approach to Runway 20. The approach was flown at 80 kt instead of 75 kt because there was a 15 kt crosswind. The pilot reported that, after touchdown, the aircraft could not be slowed despite full braking, and it ran off the far end of the runway and into a vineyard.

Record-only investigations reviewed: May - June 2026 cont

16 May 2026 **Cessna 152** **G-BNKP** Clacton Airfield, Essex

During a series of uneventful solo circuits, the student pilot landed the aircraft heavily which damaged the nose landing gear. With hindsight, the student pilot considered the speed to have been too high and that they should have initiated a go-around.

16 May 2026 **Sonex** **G-CEFJ** Temple Bruer Airfield, Lincolnshire

The aircraft experienced an engine failure on approach. The aircraft was established in a glide and made a forced landing. During landing, the aircraft struck a fence.

24 May 2026 **Sonex** **G-KATO** Otherton Airfield, Staffordshire

The aircraft was on final approach to Runway 25 when it encountered an area of subsiding air, likely associated with convective activity over adjacent farmland with differing surface heating characteristics. This resulted in a rapid loss of height. Full power was applied and a nose-up attitude adopted but the aircraft was unable to arrest the descent before it touched down in a cornfield short of the runway. The aircraft struck a ditch and came to rest inverted.

25 May 2026 **Grob G115** **G-CIMI** White Waltham Airfield, Berkshire

The aircraft was returning from a local flight and the pilot stated that he was landing in "what felt like a thermal". The pilot reported that the thermal effect appeared to stop suddenly as he began to flare the aircraft for touchdown leading to an unexpectedly high sink rate. On touchdown, the left main landing gear collapsed followed by the nose landing gear and the aircraft came to a halt.

26 May 2026 **X'Air Hawk** **G-CESJ** Chilbolton Airfield, Hampshire

The aircraft's first approach to Runway 06 was unstable and resulted in a go-around. The second approach was stable; however, the aircraft floated during the landing and touched down a significant distance along the runway. Although it was recognised the remaining runway length was insufficient to stop, a go-around was not initiated due to a concern that the aircraft would not clear powerlines beyond the end of the runway. The aircraft departed the end of the runway, crossed a ditch and came to rest in a hedge.

Record-only investigations reviewed: May - June 2026 cont

28 May 2026	**DH82C Tiger Moth (Modified)**	**G-FCTK**	Dunkeswell Aerodrome, Devon

During the landing on an introductory flight, the pilot's forward view became obstructed when the front seat passenger leaned to the left. The pilot's instruction for the passenger to return to an upright position was not heard due to engine and airflow noise. With the pilot's view restricted, he looked down the right side of the aircraft losing sight of the fence on the left edge of the runway. The aircraft deviated towards the left side of the runway, struck the fence, and overturned before coming to rest inverted in a field adjacent to the runway.

30 May 2026	**Quikr**	**G-CJNH**	Titsey Airstrip, Surrey

The aircraft touched down at excessive speed. During the landing roll, the pilot applied wheel brakes but the aircraft skidded. The brakes were released and subsequently reapplied but the aircraft overran the runway. The aircraft went through a fence and collided with a bank.

1 Jun 2026	**Beagle B121 Series 2**	**G-AXJJ**	Derby Airfield, Derbyshire

The aircraft was being flown by a solo student. The takeoff was normal but when downwind, the door opened and unlatched to 45°. The cockpit became very noisy due to wind noise, distracting the student. The aircraft conducted a normal approach but landed flat. The nose landing gear was damaged and fluid leaked out.

14 Jun 2026	**Piper PA-28-140**	**G-GCAT**	Inverness Airport

Following a heavy landing, the aircraft bounced before deviating to the right and exiting the asphalt runway onto grass. The runway excursion caused damage to the nose wheel and propeller.

16 Jun 2026	**Flylight Peabee Sub-70 Microlight**	**N/A (SSDR)**	Over Farm Airfield, Gloucestershire

The pilot reported that he "lost throttle control" and was not able to lose enough height to land at the beginning of the airstrip. The aircraft continued to descend as is passed along the strip and, as it approached the end of the grass, the pilot turned left towards an open area. On touchdown, the aircraft tipped over causing damage to the main strut and fracturing the pilot's wrist.

18 Jun 2026	**Bell 505**	**G-KANF**	Stanbridge, Bedfordshire

The helicopter's tail hit a low tree while repositioning after landing. The tail and tail rotor systems were substantially damaged.

Record-only investigations reviewed: May - June 2026 cont

26 Jun 2026 **Grob G109** **G-BIXZ** Saltby Airfield, Lincolnshire

The aircraft had started its takeoff run when, at approximately 20 kt, the airframe began to vibrate. Shortly after this the propeller departed from the aircraft. Initial inspection suggested that the propeller shaft had failed.

27 Jun 2026 **Jodel D18** **G-OLEM** Sherlowe Airfield, Shropshire

The pilot reported that he encountered rotor turbulence and sink just prior to touchdown. Power was applied but the right wing touched the ground causing the aircraft to rotate. When the aircraft had rotated through 180°, the main landing gear collapsed and the aircraft slid to a halt, pointing in the direction from which it had come.

Miscellaneous

This section contains Addenda, Corrections and a list of the ten most recent Aircraft Accident ('Formal') Reports published by the AAIB.

The complete reports can be downloaded from the AAIB website (www.aaib.gov.uk).

Bulletin Correction

Aircraft Type:	DJI Mini 5
Date:	20 May 2026
Location:	Sutton, Greater London

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Subsequent to the information provided at notification, the operator has provided a further update after review of the accident and recorded data from the UA. This showed the UA was not caught by a gust of wind. The conclusions indicated the RP had been using first person view (FPV) and relying on the automated obstacle avoidance system during the manoeuvres.

the text should read:

Whilst carrying out a survey of high voltage power lines, the UA struck the power line and then descended to the ground. The RP had been using first person view (FPV) and relying on the automated obstacle avoidance system during the manoeuvres. The system however is not designed to detect power lines and the use of FPV did not give the RP enough information for appropriate separation to avoid the collision.

The online version of this report was corrected when published on 23 July 2026.

TEN MOST RECENTLY PUBLISHED FORMAL REPORTS ISSUED BY THE AIR ACCIDENTS INVESTIGATION BRANCH

3/2015 Eurocopter (Deutschland) EC135 T2+, G-SPAO
Glasgow City Centre, Scotland
on 29 November 2013.

Published October 2015.

1/2016 AS332 L2 Super Puma, G-WNSB
on approach to Sumburgh Airport
on 23 August 2013.

Published March 2016.

2/2016 Saab 2000, G-LGNO
approximately 7 nm east of Sumburgh Airport, Shetland
on 15 December 2014.

Published September 2016.

1/2017 Hawker Hunter T7, G-BXFI
near Shoreham Airport
on 22 August 2015.

Published March 2017.

1/2018 Sikorsky S-92A, G-WNSR
West Franklin wellhead platform, North Sea
on 28 December 2016.

Published March 2018.

2/2018 Boeing 737-86J, C-FWGH
Belfast International Airport
on 21 July 2017.

Published November 2018.

1/2020 Piper PA-46-310P Malibu, N264DB
22 nm north-north-west of Guernsey
on 21 January 2019.

Published March 2020.

1/2021 Airbus A321-211, G-POWN
London Gatwick Airport
on 26 February 2020.

Published May 2021.

1/2023 Leonardo AW169, G-VSKP
King Power Stadium, Leicester
on 27 October 2018.

Published September 2023.

2/2023 Sikorsky S-92A, G-MCGY
Derriford Hospital, Plymouth, Devon
on 4 March 2022.

Published November 2023.

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GLOSSARY OF ABBREVIATIONS

aal	above airfield level
ACAS	Airborne Collision Avoidance System
ACARS	Automatic Communications And Reporting System
ADF	Automatic Direction Finding equipment
AFIS(O)	Aerodrome Flight Information Service (Officer)
agl	above ground level
AIC	Aeronautical Information Circular
amsl	above mean sea level
AOM	Aerodrome Operating Minima
APU	Auxiliary Power Unit
ASI	airspeed indicator
ATC(C)(O)	Air Traffic Control (Centre)(Officer)
ATIS	Automatic Terminal Information Service
ATPL	Airline Transport Pilot’s Licence
BMAA	British Microlight Aircraft Association
BGA	British Gliding Association
BBAC	British Balloon and Airship Club
BHPA	British Hang Gliding & Paragliding Association
CAA	Civil Aviation Authority
CAVOK	Ceiling And Visibility OK (for VFR flight)
CAS	calibrated airspeed
cc	cubic centimetres
CG	Centre of Gravity
cm	centimetre(s)
CPL	Commercial Pilot’s Licence
°C,F,M,T	Celsius, Fahrenheit, magnetic, true
CVR	Cockpit Voice Recorder
DME	Distance Measuring Equipment
EAS	equivalent airspeed
EASA	European Union Aviation Safety Agency
ECAM	Electronic Centralised Aircraft Monitoring
EGPWS	Enhanced GPWS
EGT	Exhaust Gas Temperature
EICAS	Engine Indication and Crew Alerting System
EPR	Engine Pressure Ratio
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
FAA	Federal Aviation Administration (USA)
FDR	Flight Data Recorder
FIR	Flight Information Region
FL	Flight Level
ft	feet
ft/min	feet per minute
g	acceleration due to Earth’s gravity
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
hrs	hours (clock time as in 1200 hrs)
HP	high pressure
hPa	hectopascal (equivalent unit to mb)
IAS	indicated airspeed
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
IP	Intermediate Pressure
IR	Instrument Rating
ISA	International Standard Atmosphere
kg	kilogram(s)
KCAS	knots calibrated airspeed
KIAS	knots indicated airspeed
KTAS	knots true airspeed
km	kilometre(s)
kt	knot(s)
lb	pound(s)
LP	low pressure
LAA	Light Aircraft Association
LDA	Landing Distance Available
LPC	Licence Proficiency Check
m	metre(s)
mb	millibar(s)
MDA	Minimum Descent Altitude
METAR	a timed aerodrome meteorological report
min	minutes
mm	millimetre(s)
mph	miles per hour
MTWA	Maximum Total Weight Authorised
N	Newtons
N_R	Main rotor rotation speed (rotorcraft)
N_g	Gas generator rotation speed (rotorcraft)
N_1	engine fan or LP compressor speed
NDB	Non-Directional radio Beacon
nm	nautical mile(s)
NOTAM	Notice to Airmen
OAT	Outside Air Temperature
OPC	Operator Proficiency Check
PAPI	Precision Approach Path Indicator
PF	Pilot Flying
PIC	Pilot in Command
PM	Pilot Monitoring
POH	Pilot’s Operating Handbook
PPL	Private Pilot’s Licence
psi	pounds per square inch
QFE	altimeter pressure setting to indicate height above aerodrome
QNH	altimeter pressure setting to indicate elevation amsl
RA	Resolution Advisory
RFFS	Rescue and Fire Fighting Service
rpm	revolutions per minute
RTF	radiotelephony
RVR	Runway Visual Range
SAR	Search and Rescue
SB	Service Bulletin
SSR	Secondary Surveillance Radar
TA	Traffic Advisory
TAF	Terminal Aerodrome Forecast
TAS	true airspeed
TAWS	Terrain Awareness and Warning System
TCAS	Traffic Collision Avoidance System
TODA	Takeoff Distance Available
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System
USG	US gallons
UTC	Co-ordinated Universal Time (GMT)
V	Volt(s)
V_1	Takeoff decision speed
V_2	Takeoff safety speed
V_R	Rotation speed
V_{REF}	Reference airspeed (approach)
V_{NE}	Never Exceed airspeed
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VOR	VHF Omnidirectional radio Range