AAIB
Air Accidents Investigation Branch

# AAIB Bulletin 10/2025

**TO REPORT AN ACCIDENT OR INCIDENT PLEASE CALL OUR 24 HOUR REPORTING LINE**

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*Cover picture courtesy of Niall Robertson*



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### ADDENDA and CORRECTIONS

None



**(ALL TIMES IN THIS BULLETIN ARE UTC)**

# 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.

**Serious Incident**

| | |
|---|---|
| **Aircraft Type and Registration:** | Short Bros SD3-60, N915GD |
| **No & Type of Engines:** | 2 PT6A SER turboprop engines |
| **Year of Manufacture:** | 1989 (Serial no: SH3755) |
| **Date & Time (UTC):** | 6 November 2024 at 1500 hrs |
| **Location:** | Terrance B. Lettsome International Airport, British Virgin Islands (TUPJ) |
| **Type of Flight:** | Commercial Air Transport (Cargo) |
| **Persons on Board:** | Crew - 2 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | Left mainwheel tyre carcass damaged |
| **Commander's Licence:** | No information provided |
| **Commander's Age:** | No information provided |
| **Commander's Flying Experience:** | No information provided |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

On arrival at Terrance B Lettsome International Airport (TUPJ) in the British Virgin Islands, N915GD was likely affected by nearby thunderstorm activity, reportedly experiencing a downdraught on short finals. Despite the commander applying more power to "arrest the descent", the aircraft initially touched down on the lip of Runway 07 (Rwy 07), approximately 150 m short of the threshold. It then bounced and touched down again close to the threshold. The airfield operations team later found a frangible runway light had been damaged by the aircraft when it undershot the runway.

While he knew the aircraft initially touched down in the undershoot, the commander was unaware that it had struck the light and did not file an occurrence report. The aircraft returned to its home base approximately one hour later.

An initial incorrect assessment of the severity of this incident, contributed to a delay in this serious incident being notified to the AAIB. This delay, combined with a paucity of information about the circumstances and handling of the event, made it difficult for the investigation to gain a detailed understanding of what had happened. It is unclear whether the undershoot resulted from the commander attempting to rescue an unstable approach or whether his application of power was the initiation of an unsuccessful go-around.

**History of the flight**

During an airfield inspection at TUPJ, which began at 1900 hrs Z on 6 November, it was found that a frangible light at the western edge of the Rwy 07 undershoot was missing. Tyre marks were also discovered on the extreme end of the runway. Based on the nature of the marks, their orientation and location, as well as the track between them, it was determined they were made by an aircraft rather than a ground vehicle (Figure 1). The airfield boundary fence in the Rwy 07 undershoot had also sustained damage. The barbed wire support arm on one fence pole was missing and the wire had been severed in that location (Figures 1 & 2).

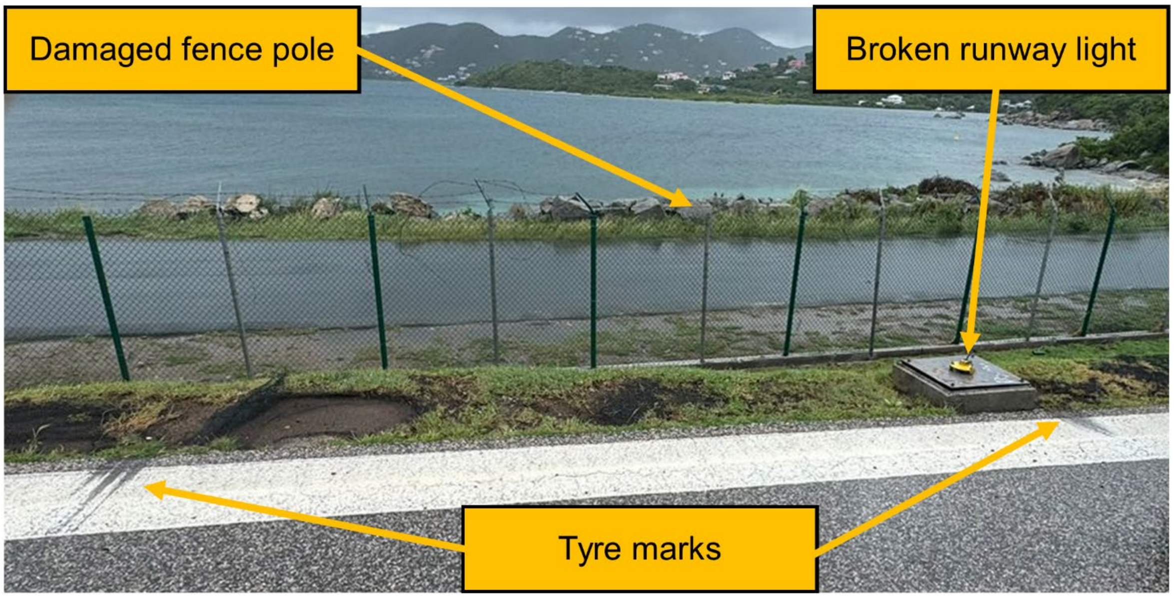



**Figure 1**

Observations from the inspection of Rwy 07 undershoot

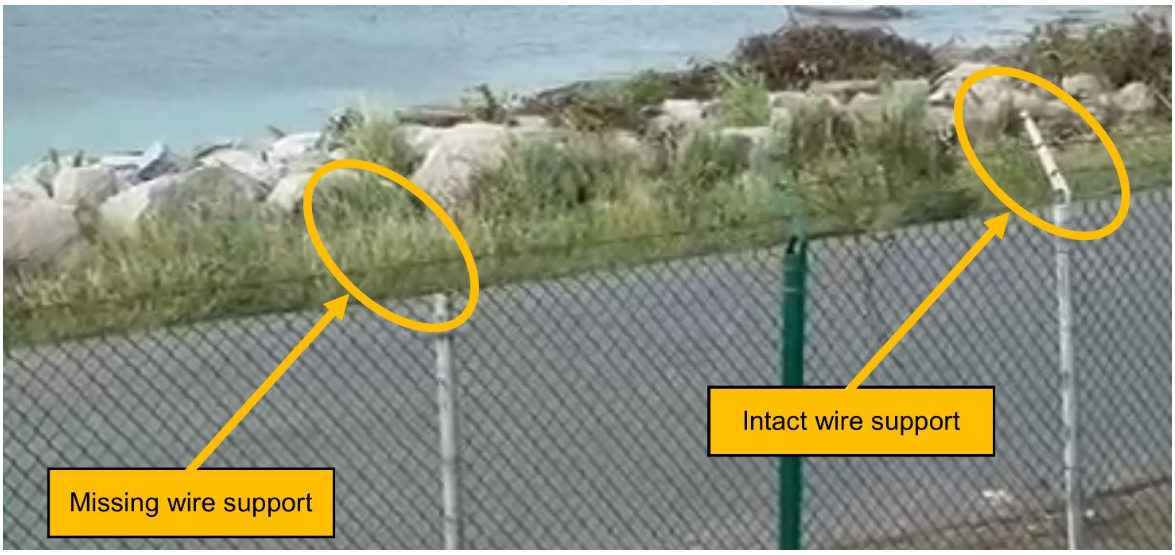



**Figure 2**

Broken fence pole with barbed wire support arm missing

The body and shattered lens from the missing runway light were found at the edge of taxiway Alpha (Figure 3).

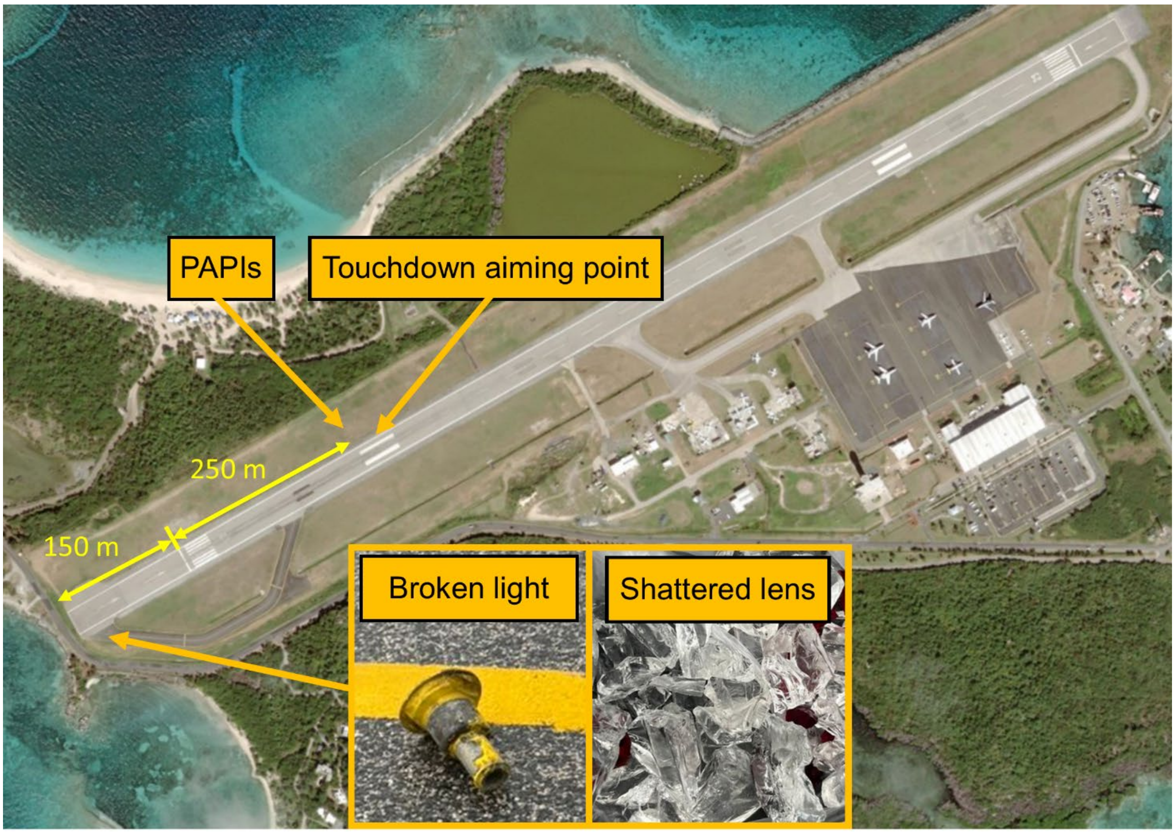



**Figure 3**
Airfield overview showing location of damage light (satellite image ©2025 Maxar)

To determine how the damage might have occurred, the airfield authorities reviewed CCTV footage from 6 November. They found that when N915GD made its approach to Rwy 07 at 1854 hrs Z it initially touched down in the undershoot at the edge of the runway pavement, bounced once and then landed off its second touchdown (Figure 4).

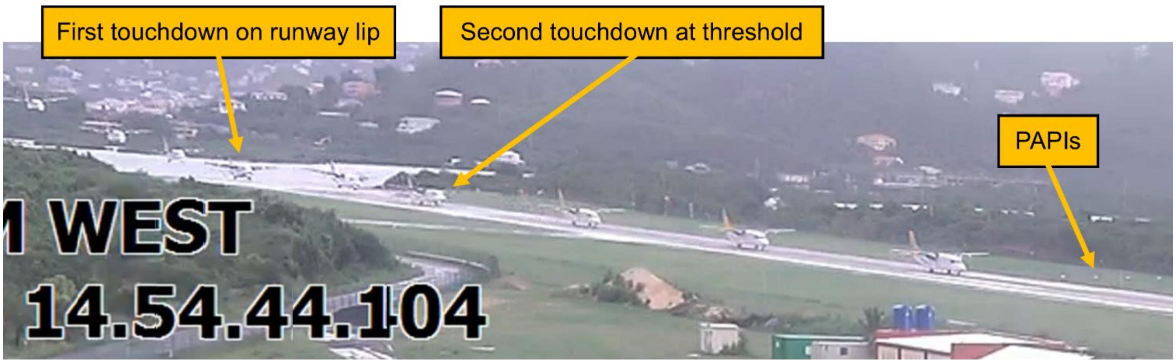



**Figure 4**
Composite CCTV imagery of N915GD's approach (local time recorded on CCTV footage)

The commander was aware the aircraft had touched down short of the threshold but did not realise it had struck the runway light in the process. No damage was observed during the turnaround and the aircraft then flew back to its base at San Juan, Puerto Rico.

**Safety reporting**

With damage to airfield infrastructure having been found, the airfield duty manager submitted a Mandatory Occurrence Report (MOR) to Air Safety Support International (ASSI) on 9 November 2024. In the MOR, the event type was recorded as '*Incident*.' Following a review of the report, ASSI reclassified the event as a Serious Incident and notified the AAIB on 6 January 2025.

Unaware that the aircraft had struck any obstacles on the approach, the flight crew did not submit a safety report about the landing but provided the following brief statement on 8 November 2024 in response to the TUPJ airfield authorities' enquiries.

> *'On November 6 the weather was marginal with rain on all quadrants, upon approaching runway 7 on short final started to experience wind gusts and probably a downdraft [sic], seemed close to a low-level wind shear. Applied power to arrest the descent. I landed slightly short of the numbers. I was totally unaware that I struck [anything].'*

Although they were requested from the commander, further details of the occurrence, which could have provided greater insight into the content and context of their 8 November statement, were not provided to the AAIB.

ICAO Annex 13 (Aircraft Accident and Incident Investigation) Attachment C lists typical examples of incidents that are likely to be classified as serious. This list includes:

> *'Take-off or landing incidents. Incidents such as under-shooting, overrunning or running off the side of runways.'*

The operator did not instigate an internal safety review for this serious incident.

**Personnel**

The commander did not supply the investigation with details of their flight licence, medical status, flying experience or recency.

**Meteorology**

The reports submitted to the AAIB did not contain meteorological information, but the UK Met Office generated a limited aftercast for the time of the serious incident. The report found that:

- The weather conditions on the day were characterised by light east to north easterly winds with scattered cloud.
- There was no indication, in the TAF or FIR Forecast of any low-level

turbulence, except for that which might be expected in the vicinity of convective clouds such as cumulonimbus (CB).

- The TUPJ TAF included a risk of thunderstorms from 1800 hrs UTC, with an associated forecast reduction in visibility and cloud bases.
- The reported intensity of the rainfall at the airfield along with the number of lightning strikes recorded on the weather radar imagery at Figure 5 indicated an active CB cell was over or close to the territory at the time of the serious incident.
- There was no indication of any significant wind shear in association with the thunderstorms, but the Met Office did not have access to the full record of wind speed or direction.

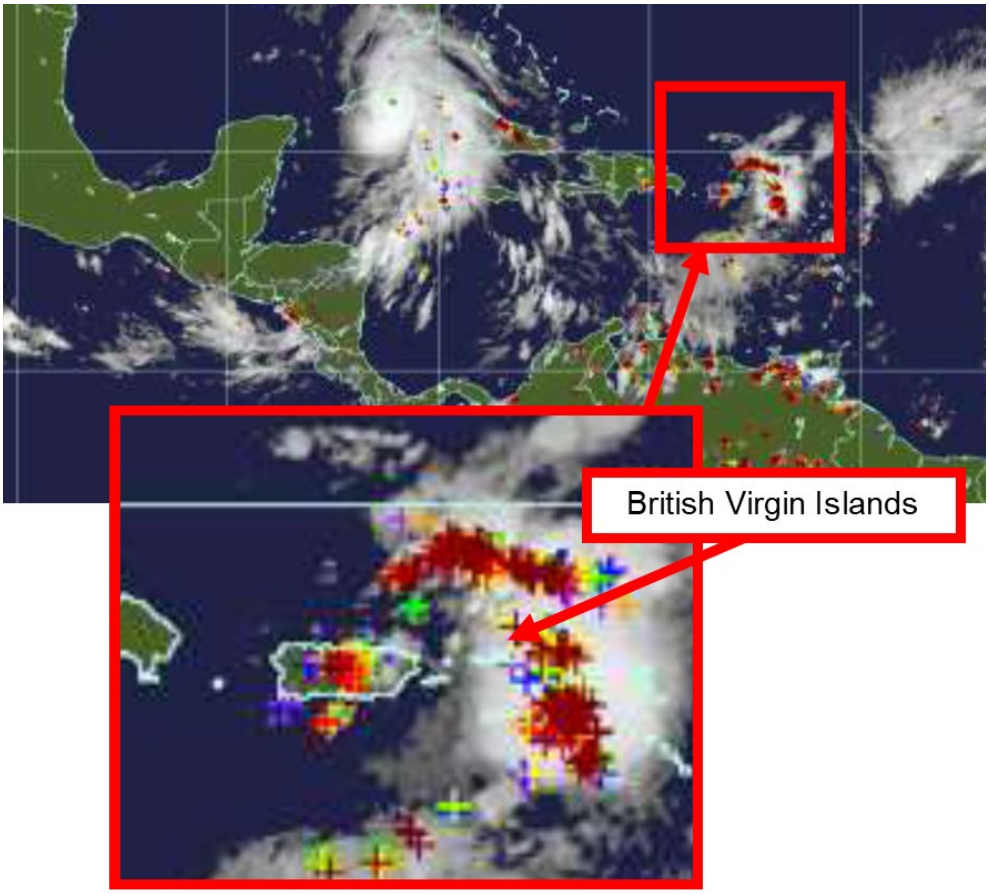



**Figure 5**

Weather radar image at 1900 hrs Z on 6 November 2024 (crosses indicate lightning strikes)

## Aircraft examination

The flight crew did not notice any aircraft damage on the turnaround at TUPJ. During maintenance action after the return flight '*marks of contact*' were found on the left mainwheel tyre which required it to be removed and replaced. The operator did not identify any other airframe damage.

**Airfield description**

TUPJ has a single runway with displaced thresholds at either end. The paved undershoot for Rwy 07 is approximately 150 m long, after which the ground falls away across a public road and rocky shoreline to the sea. The distance between the paved surface and the sea is approximately 25 m and the reported touchdown elevation is 14 ft (Figure 6). As it passes through the undershoot, the top of the airfield perimeter fence is below the level of the paved runway surface.

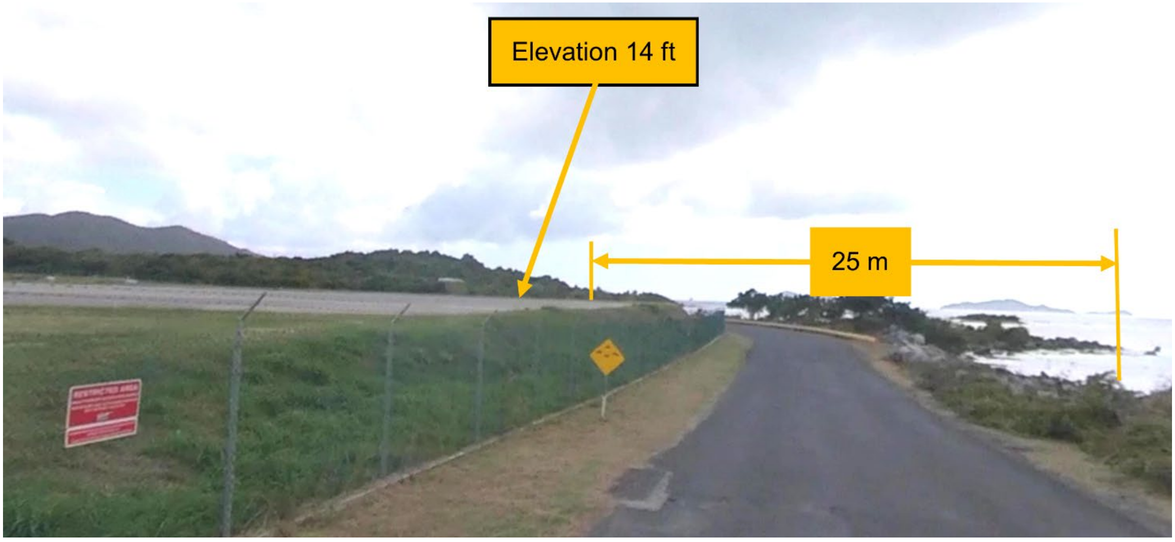



**Figure 6**

Rwy 07 undershoot looking in south-easterly direction (image ©Google Earth)

The Rwy 07 PAPIs are set for a 3.5° final approach.

The runway chart for TUPJ alerts pilots to occasional windshear on the approach to Rwy 07 when the winds are from the south and south-east.

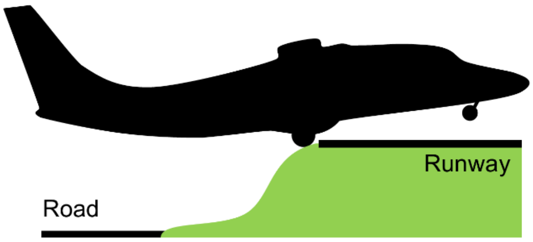
**Analysis**

While the TUPJ airfield chart warns of possible windshear with winds from the south and south-east, the winds on the day were generally light east/north easterlies. The aftercast indicated the weather conditions reported by the pilot were likely to have been associated with an active CB cell in the vicinity of the airfield. The Met Office did not have access to the full record of wind speed or direction; however, turbulence and windshear could be expected in association with CB activity.

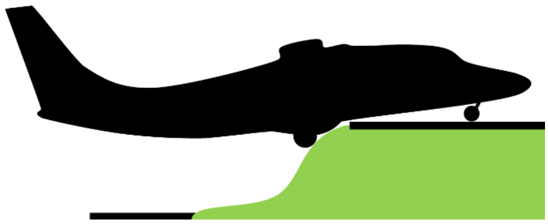
The commander's statement indicated the approach became unstable at a late stage on finals and he "applied power to arrest the descent." The lack of information provided meant the investigation did not determine whether the commander's application of power was an attempt to rescue an unstable approach or whether it was a low go-around during which the aircraft touched down before bouncing.

The airfield authorities classified the event as an incident and therefore only submitted their report to ASSI. A runway undershoot is one of the 'typical examples' of a serious incident listed in ICAO Annex 13 Attachment C, and so this was a reportable occurrence that should have been notified directly to the AAIB. Following an internal review, ASSI reclassified the event as a serious incident and appropriately referred it to the AAIB. While recognising that an undershoot had occurred, the commander did not submit an occurrence report, and the operator did not conduct an internal safety investigation. The lack of amplifying information hampered the investigation's ability to gain a clearer understanding of how the event unfolded. Nonetheless, the commander's brief statement, the operator's maintenance report, CCTV footage, and evidence of the Rwy 07 undershoot infrastructure damage combined to support the conclusion that N915GD's left mainwheel assembly struck the runway light on initial touchdown. While the perimeter fence was found broken, it could not be conclusively determined the damage resulted from contact with N915GD's landing gear.

Based on the visual 3·5° angle described by the airfield's PAPIs, the aircraft was approximately 80 ft below the expected approach path when it first touched down. Given the profile of the undershoot short of the paved runway surface, the aircraft would not have needed to be much lower on the approach for hull loss to have been a credible outcome (Figure 7).




Approximate geometry of N915GD touchdown



Theoretical geometry for lower approach

**Figure 7**
Illustrative touchdown geometries

## Conclusion

This was a reportable serious incident resulting from an unstable approach in the vicinity of CB activity which had been forecast for N915GD's arrival time at TUPJ. While the Met Office was unable to find definitive evidence of it affecting the airfield, turbulence and windshear could be expected near an active CB cell.

The initial severity assessment of incident, rather than serious incident, resulted in delayed notification to the AAIB. This delay, combined with a paucity of information about the circumstances and handling of the event made it difficult for the investigation to gain a detailed understanding of what transpired. It is unclear whether the commander attempted to rescue the unstable approach or whether his application of power was the initiation of an unsuccessful go-around.

## Accident

| | |
|---|---|
| **Aircraft Type and Registration:** | Spitfire IXT, G-BMSB |
| **No & Type of Engines:** | 1 Rolls-Royce Merlin 266 piston engine |
| **Year of Manufacture:** | 1943 (Serial no: CBAF 7722) |
| **Date & Time (UTC):** | 3 May 2025 at 1820 hrs |
| **Location:** | Near Hythe, Kent |
| **Type of Flight:** | Safety Standards Acknowledgement and Consent |
| **Persons on Board:** | Crew - 1 Passengers - 1 |
| **Injuries:** | Crew - None Passengers - Minor |
| **Nature of Damage:** | Damage to propeller, lower front engine cowling, right radiator and right wing skin |
| **Commander's Licence:** | Airline Transport Pilot's Licence |
| **Commander's Age:** | 49 years |
| **Commander's Flying Experience:** | 7,368 hours (of which 60 were on type)<br>Last 90 days - 55 hours<br>Last 28 days - 10 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB |


### Synopsis

The aircraft had been flying for about 35 minutes when the pilot noticed a slight engine vibration. This was rapidly followed by a power loss. The pilot noted a distinct smell of fuel in the cockpit and suspected a fuel problem. He briefed his passenger and established a stable glide descent to carry out a wheels-up forced landing in a field. The aircraft landed on its underside and came to a stop (Figure 1). The passenger suffered minor injuries and the pilot was uninjured.

The power loss was caused by the failure, probably age related, of a gasket, fitted within the pressure switch for the fuel low pressure warning light, which is attached to the carburettor. This allowed pressurised fuel to spray into the lower rear part of the engine bay, above and into, the air filter box. The fuel was then drawn into the air flow affecting the fuel air mixture, so the engine was running extremely rich. This resulted in the engine vibration and subsequent power loss.

In response to this occurrence, the Civil Aviation Authority (CAA) published a safety notice relating to airworthiness considerations for ageing fuel and hydraulic system components.

**Figure 1**
Spitfire Mk IXT, G-BMSB

**History of the flight**

The aircraft was operating on a Safety Standards Acknowledgement and Consent (SSAC) passenger flight and was flying in formation with another Spitfire. It had been flying for about 35 minutes and was roughly two miles south of Lympne Castle in Kent, when the pilot noticed a slight engine vibration. He checked the engine temperatures, pressures and rpm, all of which appeared normal. However, within five seconds of the onset of the vibration, the engine rapidly lost power. It then briefly recovered, surged and appeared to lose power again. The engine started to backfire and the pilot observed dark coloured smoke emanating from the exhausts. He briefly experimented with moving the throttle to see if he could find a point where the engine would produce power, but this was unsuccessful. The pilot noted a smell of fuel in the cockpit so suspected a fuel problem. The aircraft rapidly lost airspeed and the pilot lowered the nose, chose a suitable area of open ground and made a gradual 10° right turn to line up and carry out a forced landing. He briefed his passenger, who remained calm throughout. He was in radio contact with the other Spitfire pilot who relayed a MAYDAY to Biggin Hill ATC on his behalf. He then concentrated on maintaining airspeed and energy throughout the descent but was able to establish the low fuel pressure warning light had illuminated so selected the boost pump ON. He also checked the magneto switches but neither action made any difference. He decided not to lower the landing gear. He made a slight heading adjustment to avoid overflying a caravan park and reduced the airspeed to 100 kt, closed the throttle and prepared for touchdown. He briefed his passenger to brace, gently rounded out and landed in the field. The aircraft remained upright and the pilot described how the aircraft came to a stop “surprisingly quickly”. The pilot and passenger vacated the cockpit unaided. The passenger suffered minor bruising and the pilot was uninjured. The aircraft sustained damage to its underside and propeller.

**Engine fuel system description**

Fuel is supplied to the supercharger by a Bendix injection carburettor. This system relies on accurate metering of fuel to the discharge nozzle to inject fuel into the supercharger at a pressure of about 5 psi, in response to the throttle demands and flight conditions. To achieve this, a constant supply of pressurised fuel is required. A drop in fuel pressure may cause an engine malfunction and so a fuel pressure warning light is fitted in the cockpit. This warning light is controlled by a low pressure warning switch fitted to the carburettor.

**Aircraft examination and cause**

The aircraft was recovered to the operator’s maintenance facility and examined. From the description given by the pilot, a substantial fuel leak within the engine bay was suspected. This was confirmed and a gasket fitted to the carburettor fuel low pressure switch assembly cover plate, was found to have degraded (Figure 2) probably due to ageing. The switch had developed an external leak at system pressure, because casement securing screws on the switch body had loosened off. Aging effects in elastomeric components, such as the gasket, include shrinking and hardening and it is possible that this resulted in the screws no longer being at the correct clamping torque. The fuel pressure switch was at least 70 years old and its last overhaul date was unknown.

**Figure 2**

Fuel pressure switch and degraded gasket

The leak allowed pressurised fuel to spray into the lower rear part of the engine bay, above and into the air filter box. The fuel was then being drawn into the air flow, affecting the fuel air mixture, so the engine was running extremely rich. This directly resulted in the engine vibration and power loss.

**Ageing components**

The CAA found that similar types of pressure switch, with various part numbers and modification states, were used in the fuel and hydraulic systems of various piston and gas turbine powered aircraft from the 1940's to the 1980's. Many such historic aircraft are still in operation within the UK.

As a result of this occurrence, the CAA issued Safety Notice (SN) SN-2025-009 *'Maintenance of historic piston and gas turbine airframe fuel/hydraulic system switches and components',* dated 9 June 2025. The SN informs historic aircraft operators and maintenance organisations of the importance of monitoring and maintaining the airworthiness of ageing tertiary fuel and hydraulic system switches and similar components.

It emphasises the need to have procedures in place to identify components that may be affected by age degradation or extended use and, to ensure that the aircraft maintenance programme includes provisions for regular inspection, periodic operational and functional checks, and calendar life limits, for such components.

**Pilot's comments**

The pilot described his actions and thought process in detail from which several important safety aspects were noted. The Spitfire is a high-performance aircraft designed for speed and manoeuvrability, but with a loss of power and windmilling propeller, energy management to maintain control is paramount.

The pilot described how he made several decisions in order not to reduce or lose energy. He did not lower the landing gear or jettison the canopy, as the resultant drag would have been detrimental to his stable glide speed and rate of descent.

Prioritising the need to fly the aircraft and, faced with a high workload, he asked the pilot in the accompanying aircraft to carry out the radio communications. This allowed him to concentrate more fully on the forced landing. He also noted that his passenger, who was an experienced professional commercial pilot, remained calm throughout.

Reflecting on the forced landing, the pilot considered factors which had contributed to the successful outcome. These included being mindful of height in the cruise, to provide more time for decision making in the event of an emergency and avoiding overflying built up areas in a single engine aircraft. He described the benefits of performing practice forced landings on a regular basis. This was something he routinely did and also emphasised to students in his role as a flying instructor/class rating instructor.

He also felt that the operator's policy of holding regular 'What if?' discussions, which had in the past covered power loss and forced landings, greatly helped in his handling of the event.

**Conclusion**

The engine lost power when a failed gasket in the fuel pressure warning switch, allowed pressurised fuel to spray into the engine bay and be drawn into the induction system. This led to an overly rich fuel mixture, resulting in the power loss.

The pilot completed a successful forced landing because his training and practice enabled him to identify a suitable landing site within the gliding capability of the aircraft, to prioritise his actions and to effectively manage the aircraft energy.

**Safety action**

| |
|---|
| The Civil Aviation Authority issued Safety Notice SN-2025-009 to inform historic aircraft operators and maintainers of the importance of monitoring and maintaining the airworthiness of ageing tertiary fuel and hydraulic system switches and similar components. |

**Accident**

| | |
|---|---|
| **Aircraft Type and Registration:** | Phoenix Wings Orca |
| **No & Type of Engines:** | 8 electric motors |
| **Year of Manufacture:** | 2024 (Serial no: PW54) |
| **Date & Time (UTC):** | 25 March 2025 at 1450 hrs |
| **Location:** | Coombe Country Park, Warwickshire |
| **Type of Flight:** | Commercial Operations (UAS) |
| **Persons on Board:** | Crew - None    Passengers - None |
| **Injuries:** | Crew - N/A    Passengers - N/A |
| **Nature of Damage:** | Damaged beyond economic repair |
| **Commander's Licence:** | Other |
| **Commander's Age:** | 23 years |
| **Commander's Flying Experience:** | 85 hours (of which 5 were on type)<br>Last 90 days - 16 hours<br>Last 28 days - 7 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

The aircraft struck the ground in a wooded area whilst on approach to land at a site adjacent to Coventry Hospital. The accident occurred during the sixth consecutive flight, which was in preparation for demonstrating the aircraft being operated in accordance with the operator's Beyond Visual Line Of Sight with Visual Mitigations (BVLOS VM) authorisation.

The cause of the accident was identified as a software bug in combination with a loss of synchronisation between the Remote Pilot (RP) and the Safety Remote Pilot (SRP), whereby the SRP's hand controller had remained set to the DISARM position when the aircraft had taken off. When the aircraft came within range of the SRP's controller, this resulted in power being removed from the aircraft's electric propulsion motors, leading to the aircraft stalling, its emergency parachute system being disabled, and a subsequent uncontrolled descent from a height of 60 m.

**History of the flight**

A number of flights were being flown a total distance of about 1.5 nm between a farm and a field adjacent to Coventry Hospital (Figure 1). These were being performed in preparation for a BVLOS VM demonstration flight.

The flight crew consisted of a Remote Pilot (RP), Safety Remote Pilot (SRP), Pad Manager (PM), Visual Observer (VO)[1] and an Emergency Response Team (ERP). The PM was located at the farm site and had a handheld controller that allowed the aircraft to take off and land. The SRP was at the hospital landing site and had a remote controller that provided the ability to take manual flight control of the aircraft, arm and disarm it and also terminate flight in the event of an emergency (refer to the aircraft information section for further detail). The RP was at the operator's facility some miles away and was using a PC-based ground control station to control the aircraft, with the VO located about midway between the two sites and the ERP collocated with the SRP (Figure 1).

Coordination between the flight crew was made using two-way radios, with the control settings of the RP and SRP controllers being manually synchronised by each pilot, so that the aircraft was appropriately armed in preparation for flight and disarmed (shutdown) after each landing.

Five flights were successfully flown over the period of about an hour and, having completed the ground checks at the farm site, the aircraft took off to fly back to the hospital landing site. The aircraft climbed vertically to a height of about 50 m agl before transitioning to forward flight where it then climbed to its cruise height of 60 m agl. The aircraft's takeoff weight was 38.9 kg.

The aircraft was observed to follow the planned flight profile but as it approached approximately the halfway point the aircraft's motors suddenly stopped. The aircraft initially maintained altitude but subsequently stalled, before descending quickly and striking the ground within a wooded area (Figure 1). No persons were injured and there was no damage to property; the aircraft was damaged beyond repair.

The RP, SRP and PM reported that they had not made any selections on their respective controllers in the period before the aircraft departed from controlled flight.

**Footnote**

1 The VO is a designated person who assists the pilot during BVLOS flights. The VO's primary responsibility is to maintain visual contact with the aircraft and its surroundings, alerting the remote pilot who may not be able to observe the aircraft to any potential hazards or conflicts. The VO provides the visual mitigations required by the BVLOS VM authorisation.

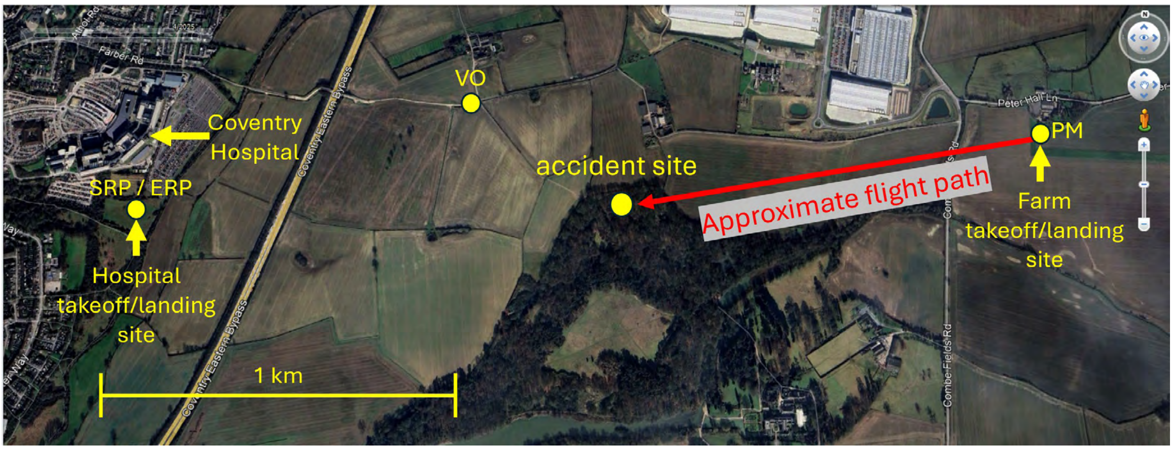



**Figure 1**

Relative position of takeoff, landing and accident sites
© 2025 Google, Image © 2025 Airbus

### Accident site

The aircraft struck the ground in a wooded area (Figure 2) which was accessible to the public. Approximately 250 m from the accident site was an outdoor activity centre.

**Figure 2**

Aircraft wreckage

**Aircraft information**

The aircraft (Figure 3) is an unmanned, electrically powered vertical takeoff and landing aircraft. It is equipped with eight propulsion motors. Six motors are installed under the wings, and these provide vertical takeoff and landing capability. Two motors are mounted at the front of the wings that provide propulsion during forward flight. The MTOW of the aircraft is 52 kg with a cruise speed of 60 kt and maximum range of 54 nm.

The aircraft is controlled remotely from a ground control station, and by an optional SRP controller. The ground control station to aircraft communications system provides uninterrupted signals that enable the aircraft to be operated BVLOS. The signals between the SRP controller and aircraft are limited by range and line of sight.

At the time of report publication, 26 aircraft have been manufactured, of which 20 remain in operational service. The accident aircraft had accumulated a total of 13 hours and 59 minutes flight time and had completed 119 flights prior to the accident. This was the first accident involving this type.

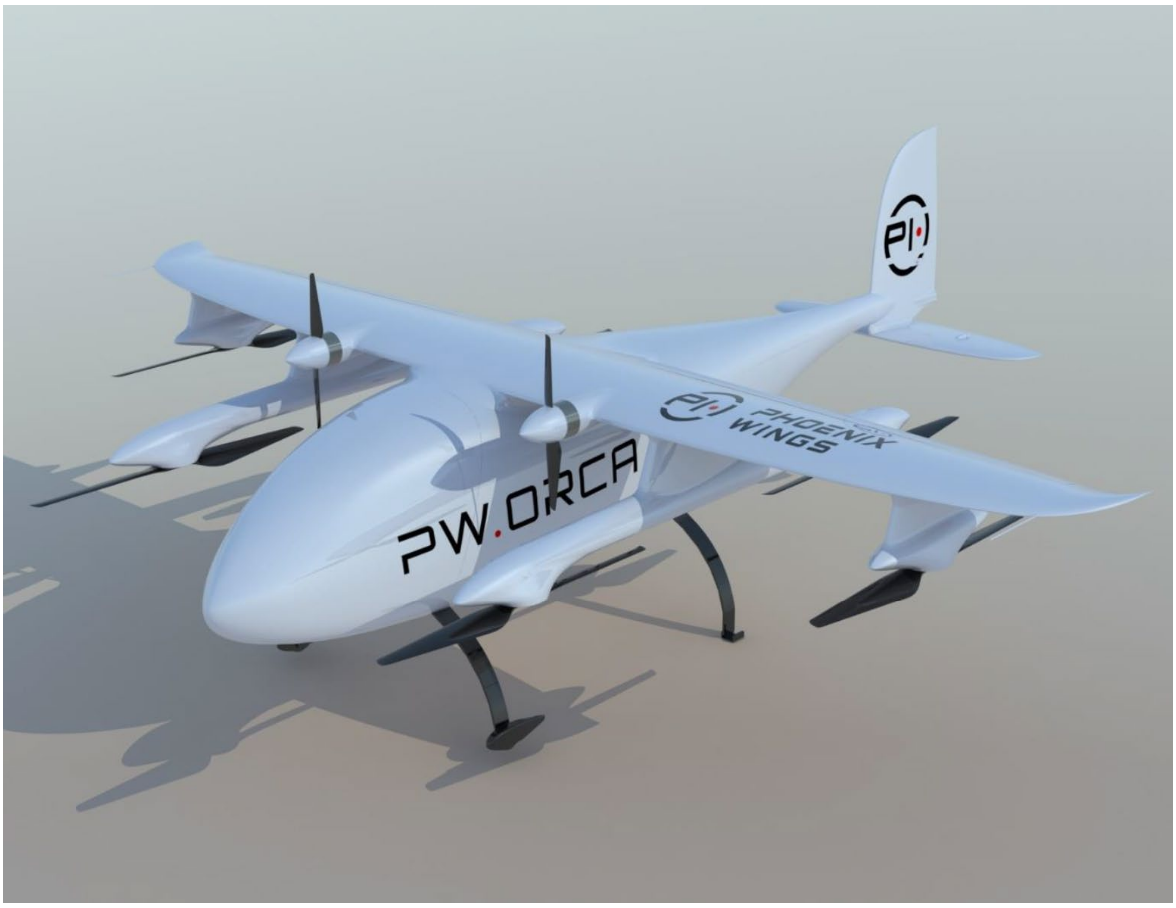



**Figure 3**

PW Orca
(used with permission)

*Flight termination system (FTS)*

The aircraft is equipped with a FTS which, when activated, removes power from its electric propulsion motors and deploys the parachute[2]. The ailerons also move to place the aircraft into a spin, which is intended to quickly reduce any forward movement of the aircraft as it descends. This system can bring the aircraft safely to the ground at a controlled rate in the event of an emergency. The aircraft manufacturer's minimum deployable height for the parachute to be fully effective is 60 m above the ground[3].

The FTS activates automatically if the aircraft's descent rate exceeds 2,000 fpm, or it can be manually triggered by selection of a TERMINATE push button on the RP ground station or switch on the SRP controller (Figure 4).

*Arm and disarm function*

The arm and disarm function applied or removed power to the electric propulsion motors respectively and enabled or disabled remote control of the aircraft. Upon landing the aircraft was designed to automatically disarm itself, enabling it to be safely approached by ground personnel. The design of the system also allowed the aircraft to be manually disarmed when in flight or on the ground.

The manufacturer advised that the ability to manually disarm the aircraft was provided as it was possible after an abnormal landing, a failed takeoff or entanglement on the ground that the aircraft may not always automatically disarm. It was envisaged that the manual disarm function would only be used when the aircraft was close to, or on the ground.

The aircraft is fitted with two physical switches that enable its hardware (power made available to motors and control systems) to be armed or disarmed. Once the hardware was armed, the aircraft's control software could then be armed and capable of responding to remote commands from the RP, SRP and PM controllers. It could be disarmed using a press and hold switch on the RP ground control station or by selection of a toggle switch on the SRP controller (Figure 4).

**Footnote**

2 The parachute manufacturer refers to the model fitted to the aircraft as a 'Tough G2 parachute system'.

3 The parachute manufacturer specified that the minimum height was 40 m, but the aircraft manufacturer provided an additional safety margin to take account of the vertical and horizontal velocity of the aircraft and time to fully deploy the parachute.


**Figure 4**

RP controller showing DISARM and ARM switch

The manufacturer had considered the scenario of the aircraft being in flight and the SRP controller being inadvertently set to the DISARM position when the aircraft came within range of the controller. To prevent the inadvertent in-flight shutdown of the aircraft, the system was intended so that it should require the received signal to change state from DISARM to ARM and then back to DISARM before it would respond. A description of the operation of the SRP controller arm/disarm switch was provided in the manufacturer's Flight and Ground Control Technical Manual (Figure 5).

<table>
<tr><th>Function</th><th>Label</th><th>Description</th></tr>
<tr><td>Arming switch</td><td>DISARM/<br>ARM</td><td>UP: Disarm<br>DOWN:<br>• Allow arming by PW.GCA or PW.PMA (when in AUTO)<br>• Arm (when in MANUAL)<br><br>The arming switch is a secure switch, meaning it can only be switched if it is pulled out at the same time.<br><br>The switch only reacts to intentional changes. The current state is shown in PW.GCA and changes to the state are announced by audio message.<br><br>When the aircraft is flying in AUTO, all switches except for the arming, manual override and flight termination switches are ineffective.<br><br>The arming switch allows disarming of the aircraft by switching it from ARM to DISARM at any time.<br><br>When in DISARM, the switch prevents software arming. This is also communicated by a warning message in PW.GCA.<br><br>When in AUTO, switching to ARM only means that arming is now possible through PW.GCA. Also, if it is a mission with a take-off by PW.PMA, only now the aircraft starts asking for a clearance for take-off.<br><br>To arm manually, the following settings must be established prior to switching the arming switch to ARM:<br>• remote control is turned ON and the connection is good (Connection indication with bars on display)<br>• throttle LOW<br>• configuration switch COPTER<br>• manual override switch MANUAL<br><br>Turning on VLOS Pilot Remote Control while flying:<br>If the arming switch is in DISARM before the transmitter connects to the aircraft, the aircraft won't disarm, since it only reacts to intentional changes of switches when the VLOS Pilot Remote Control is connected.</td></tr>
</table>

**Figure 5**

Arm/disarm switch function
(Dated 23 April 2025 Revision 1.4)

The manual also included text (emphasised in red) to draw particular attention to the operation of the aircraft in response to SRP controller selections (Figure 6).

**Important: Reaction to all switches is based on changes to the switch, not on the current state of the switch. There is one exception: The control mode switch is absolute, so its position directly dictates the mode the aircraft will be in, when flying manual.**

- This is to ensure that the switch command is intentional
- It might be needed to cycle a switch to another position and back, if the switch is already in the position of the command to be sent
- It is recommended that the VLOS pilot follows the aircraft's current state with the switches while it is flying automatically, so that in case of a manual take over, every switch action has an effect right away without the need for a switch cycle
- It is recommended to use control mode VEL for manual flying, since it is more stabilized and keeps altitude when throttle is at center
- Control mode ATT shall only be used in case of the unavailability of GNSS
- When the aircraft is flying in AUTO, all switches except for the arming switch and the manual override switch are ineffective
- Check VOLUME knob when turning on device, so audio warnings are noticeable

**Figure 6**

SRP controller switch operation
(Dated 23 April 2025 Revision 1.4)

After the accident, the aircraft manufacturer confirmed to the operator that if the aircraft was disarmed in flight that the FTS would also be disabled; this information was included in the aircraft's technical manual provided to the operator within the section concerning the operation of the parachute system which stated:

> *'The Tough [G]2 is unlocked and locked automatically when the aircraft is armed and disarmed with the hardware arming switches. Furthermore, all parachute activation conditions of the Tough G2 are only enabled when the aircraft is armed by software.'*

The aircraft operator stated that it had not appreciated that the FTS would be disabled in flight if the aircraft was disarmed and noted that, unlike the SRP control selections in the technical manual, the statement about the parachute arming was not similarly emphasised to draw attention to it. The operator considered the ability to disarm the aircraft in flight to pose a safety hazard and subsequently requested the manufacturer to remove this capability.

## Recorded information

Recorded data was available from onboard the aircraft and the RP ground control station. The onboard data included the control signals received from the RP station. It also included those from the SRP controller[4] but only when it was in range. The SRP controller does not record any data.

**Footnote**

[4] The remote pilot ground station uses a command-and-control signal (C2) which is designed to provide a permanent connection with the aircraft. The remote safety pilot controller uses a 2.4 GHz radio frequency signal that will lose connection when the aircraft is either out of range or the signal is masked by terrain features or structures.

The data showed that during the flight prior to the accident, the SRP controller was correctly set to the ARM position. This signal was recorded by the aircraft for about 90 seconds until it moved out of range of the SRP controller and communication was lost. About 80 seconds later, the aircraft landed at the farm site, where the PM replaced the aircraft's battery pack. The aircraft then took off to fly back to the hospital site under automatic flight control.

The takeoff and initial cruise were normal, and when at a distance of about 0.7 nm from the hospital site, the communication link was re-established between the aircraft and SRP controller. The recorded signals showed that at this point the arm/disarm switch on the SRP controller was in the DISARM position. Almost immediately the aircraft responded by removing power to its electric propulsion motors and the aircraft's airspeed started to quickly reduce. The aircraft initially continued to maintain altitude using its elevators, but eventually stalled, after which it rolled to the right and descended. The descent rate reached about 3,000 fpm before the aircraft struck the ground. A summary of the recorded data from the aircraft is provided below:

Flight from hospital-farm-hospital (flights one and two)

- 1319:07 hrs SRP controller signal set from DISARM to ARM
- 1311:38 hrs takeoff from hospital
- 1313:59 hrs aircraft out of SRP controller range
- 1315:16 hrs lands at farm
- 1323:24 hrs takeoff from farm
- 1324:31 hrs aircraft in SRP range (aircraft recording shows SRP controller signal in the ARM position)
- 1326:26 hrs lands at hospital
- 1326:36 hrs SRP controller signal set from ARM to DISARM

Ground operation at hospital

- 1343:08 hrs SRP controller signal set from DISARM to ARM
- 1346:10 hrs SRP controller signal set from ARM to DISARM

Flight from hospital-farm-hospital (flights three and four)

- 1349:04 hrs SRP controller signal set from DISARM to ARM
- 1353:09 hrs takeoff from hospital
- 1355:11 hrs aircraft out of SRP controller range
- 1356:13 hrs lands at farm
- 13:58:14 to 14:00:51 battery hot swap
- 1408:44 hrs takeoff from farm
- 1409:40 hrs aircraft in SRP controller range (aircraft recording shows SRP controller signal in the ARM position)
- 1411:38 hrs lands at hospital

Flight from hospital-farm-hospital (flights five and accident flight)

- 1422:18 hrs SRP controller signal set from ARM to DISARM
- 1422:54 hrs SRP controller signal set from DISARM to ARM
- 1425:40 hrs takeoff from hospital
- 1427:07 hrs aircraft out of SRP controller range
- 1428:24 hrs lands at farm
- 1436:07 hrs takeoff from farm
- 1436:59 hrs aircraft in SRP controller range (aircraft recording shows signal has changed to DISARM at some point since 1427:07 hrs)
- 1436:59 hrs aircraft disarms in flight and power is cut to the propulsion motors

**Training and operating procedures**

The operator of the accident aircraft had received operational training provided by the aircraft manufacturer. This included the use of the ground control station, SRP and PM controllers. The operator stated that the training content did not include that the FTS would be disabled in flight if the aircraft was disarmed.

The operator advised that its procedure in the event of an in-flight emergency was to activate the FTS and that the disarm function would only be selected when the aircraft was on the ground.

It also advised that its normal procedure was for the SRP and RP to verbally coordinate the selection of the ARM/DISARM selections on their respective controllers. This included setting the controllers to DISARM after landing, and ARM in preparation for flight, irrespective of whether the SRP controller was in communication range of the aircraft. However, the operator's checklist did not include a 'check and challenge' of the ARM/DISARM settings.

*Operational authorisation (OA)*

The operator of the aircraft held an OA issued by the UK CAA. The OA did not explicitly require the use of an SRP, but it did refer to the operator's Operation Manual Volume 1 which included the use of an SRP when operating the aircraft type.

The aircraft manufacturer stated that the aircraft type was operated in eight countries, of which four were in Europe (including the UK) and four in Asia and further advised that of all the operators, only that of the accident aircraft used an SRP. The manufacturer considered that an SRP was unnecessary, with the use of a SRP controller increasing the operational complexity of the system and that a loss of SRP and RP settings could subsequently occur.

The aircraft operator stated that it was reviewing its operational procedures regarding the advantages and disadvantages of using an SRP when operating the aircraft type.

## Aircraft software and testing

In November 2024, an updated version of the aircraft operating software was released by its manufacturer. This introduced a signal filter that incorporated a 200 ms delay intended to resolve infrequent 'glitches' in SRP controller signals received by the aircraft. This software was installed on the accident aircraft.

The manufacturer advised that it followed a software development process intended to encompass iterative testing prior to final release. However, after the accident the manufacturer advised that it had omitted to test the scenario of an aircraft in flight establishing communication with an SRP controller that was set to DISARM. When this scenario was then tested, the 'de-glitch' signal filter inadvertently resulted in the aircraft immediately disarming.

## Analysis

When the aircraft took off from the hospital site during the fifth flight, the SRP controller's arm/disarm switch was in the ARM position. In accordance with the operator's procedures it should then have been set to the DISARM position when the aircraft landed and set back to the ARM position prior to takeoff. However, the recorded data showed that as the aircraft approached the hospital landing site, and communication with the SRP controller was established, the controller was recorded as being in the DISARM position. The SRP reported that he had not moved this switch during the flight. It is therefore most likely that the selection was synchronised correctly with the RP after the aircraft had landed at the farm, but a loss of synchronisation with the RP then occurred, with the selection remaining in the DISARM position when the aircraft took off.

The checklist used by the RP and SRP did not include a formal verification (check and challenge) of the arm/disarm switch selection. This increased the possibility that a loss of synchronisation between the two remote pilots was not detected and this risk may have been further increased by conducting a number of flights in relatively quick succession.

Although the SRP controller was inadvertently set in the DISARM position when communication was established with the aircraft, this scenario had already been considered by the manufacturer that had designed the system so that it would not disarm the aircraft in this eventuality. However, the change to the software in November 2024, which was not retested against the scenario above prior to its release, unintentionally resulted in the aircraft disarming in flight. This also disabled the FTS, which otherwise would have automatically deployed the parachute. The subsequent uncontrolled descent posed a safety hazard to people and property on the ground. Given the aircraft's weight, if it had struck a person, it is likely that serious or even fatal injuries may have occurred.

## Conclusion

A change to the aircraft's operating software by its manufacturer meant that, under a particular set of circumstances, it no longer performed as intended. The SRP controller selection had remained in the DISARM position when the aircraft took off, and the software bug resulted in the unintended in-flight shutdown of the aircraft's electric propulsion motors, the disabling of the aircraft's safety parachute system from deploying, and a subsequent uncontrolled descent from a height of 60 m.

This accident highlights the importance of ensuring that change management processes include comprehensive scenario testing, particularly for safety-critical functions. While the manufacturer followed an iterative development process, this incident emphasises the need to validate software behaviour against all known operational cases.

## Safety actions

Following this accident the following safety actions were taken:

The aircraft manufacturer has:

- Notified all operators about the safety critical software issue.
- Released new software to resolve the protection logic to ensure that the 'deglitch' filter does not interfere with the arm/disarm switch protection function.
- Updated the flight and ground control manuals to highlight the importance of switch state positions and to include additional information on the operation of the FTS and disarm function.

The aircraft manufacturer also stated that it is considering a change to the aircraft's software that will prevent the aircraft being manually disarmed in flight (remove power from motors and disable the FTS) using the RP ground station or SRP controller. This software change is expected to be released in August 2025.

The aircraft operator has:

- Grounded all flights of this aircraft type until such time that it completed a revalidation process to determine the aircraft's suitability for future operation following changes to the aircraft's software.
- Updated its flight reference cards to include checks that switch selections of the RP ground control station match those of the SRP controller.

The aircraft operator also advised that it is reviewing the advantages and disadvantages of continuing to operate the aircraft with an SRP.

## 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: July - August 2025

**20 Jun 2024** **Vans RV-8A** **G-RVBJ** Bolt Head Airfield, Devon

The pilot landed on grass Runway 11 having used the windsock near the threshold to assess the wind as "a few knots" from the south. After a normal touchdown, the pilot began braking but became aware that the aircraft was still moving quickly. He applied maximum braking and subsequently shut down the engine, but the aircraft veered left just before the end of the runway, struck a fence and came to rest. After securing the aircraft, the pilot noticed that the windsock at the eastern end of the airfield indicated a tailwind of approximately four to six knots. Subsequently, it was found that the throttle control cable was restricted such that when the throttle lever was moved aft, it stopped “about an inch” from the fully closed position. The pilot considered that there would have been residual power from the engine that contributed to the difficulty experienced in slowing the aircraft.

**28 May 2025** **EV-97 teamEurostar UK** **G-CFGX** London Colney Airfield, Hertfordshire

The pilot performed a successful landing and two uneventful touch-and-go circuits which were followed by a second landing. While decelerating after landing, the pilot reported being hit by a strong tailwind which accelerated the aircraft leading to a departure from the runway.

**9 Jun 2025** **Robinson R44 II** **G-STUY** Nottingham Heliport

Having satisfactorily flown three dual circuits, the student pilot was completing a fourth circuit solo. During the landing the helicopter touched down just short of the helipad on sloping ground. As the aircraft settled on the sloping ground, the tail came down and nose rose up. The pilot pushed the cyclic control forward too much and the aircraft rolled forward, damaging the landing skid.

**20 Jun 2025** **Virus SW 127 912S(1)** **G-PIVI** Enstone Airfield, Oxfordshire

As the aircraft began the approach to land, the pilot noticed an aircraft preparing to depart on the hard runway. The pilot radioed their intention to land on the airfield frequency but the frequency that the pilot used was incorrect. As the aircraft approached the runway, it remained occupied so the pilot elected to land on the adjacent grass runway. Unfortunately a rise in the runway surface obscured the full length of the runway and the aircraft touched down in the undershoot where it struck a pile of earth damaging the nose and main landing gear.

**Record-only investigations reviewed: July - August 2025 cont**

**26 Jun 2025** **Cameron A-400** **G-VBAU** Shortwood, Gloucestershire

The pilot identified a landing site, noting the presence of power lines at the far end of the chosen field. He judged that there was sufficient space available to land and stop the balloon before the power lines. During landing the balloon encountered a gust, and its speed increased, causing the basket to drag for some distance. After stopping, the pilot heard a loud bang and realised the balloon's envelope had contacted the power lines.

**30 Jun 2025** **Piper PA-24-260** **G-ATNV** Andrewsfield Aerodrome, Essex

The pilot reported that, as he turned right onto final approach for Runway 09 the flight controls became unresponsive, and he was unable to control the aircraft. The landing gear was down and he recalled that he may have selected partial flap whilst on base leg. The pilot advised that he become disorientated and his next recollection was the aircraft striking the ground in a field. The pilot’s account is consistent with the aircraft entering the initial stages of a stall.

**3 Jul 2025** **Vans RV-6** **G-CHFG** Hamilton Farm Airstrip, Kent

While landing on a narrow grass runway, the aircraft entered the long grass to the side of the runway. This caused it to decelerate and veer sideways, and the aircraft tipped onto its nose.

**3 Jul 2025** **Jabiru J400** **G-JABJ** Headcorn Aerodrome, Kent

On an instructional flight the aircraft had lined up for an approach on Runway 10 in variable wind. As the aircraft crossed the threshold, the wind speed decreased significantly and the aircraft touched down heavily on the right main landing gear before becoming airborne again. The instructor took control, applied power and landed further down the runway.

**9 Jul 2025** **Sonex** **G-CEFJ** Croft Farm Airfield, Worcestershire

During landing, the aircraft encountered some protuberances on the grass airstrip and on the last bump the nose landing gear collapsed.

**11 Jul 2025** **Cessna 152** **G-BXVY** Stapleford Aerodrome, Essex

The aircraft bounced on touchdown and the student pilot pushed the aircraft's nose down in an attempt to control the landing . When the aircraft touched down again, the nose landing gear failed.

**12 Jul 2025** **Jodel D120** **G-ATLV** Clench Common Airfield, Wiltshire

After a normal landing the right hand main wheel became entangled in grass which resulted in it separating from the aircraft.

**Record-only investigations reviewed: July - August 2025 cont**

**12 Jul 2025** **Jabiru SPL-450** **G-BYYL** Spilsted Farm Airfield, Sussex

After an uneventful touchdown, the aircraft briefly became airborne after encountering a bump during the landing roll. It touched down again nosewheel first and the nose gear collapsed.

**14 Jul 2025** **Extra EA 300/200** **G-GLOC** East of Fowlmere Airfield, Cambridgeshire

As the aircraft was positioned for landing, the engine became unresponsive to throttle inputs as the throttle cable had failed. The aircraft landed in a corn field and became inverted during the ground run.

**17Jul2025** **Zenair CH 650B** **G-ZDCL** Full Sutton Airfield, Yorkshire

Following a bounced landing, the pilot applied power but not quickly enough to prevent the aircraft touching down again nose gear first.

**21 Jul 2025** **Aquila AT01-100A** **G-TSDA** Teesside Airport, Durham

After touchdown, the nose landing gear collapsed and the aircraft slid to a halt on the runway.

**23 Jul 2025** **Piper PA-28-181** **G-BPXA** Cromer Airfield, Norfolk

During landing, the aircraft overran the end of the grass runway and came to rest in a hedge.

**28 Jul 2025** **Reims Cessna FRA150L** **G-PHOR** Peterborough Business Airport, Huntingdonshire

After what appeared to be a normal approach, the aircraft bounced back into the air on touchdown. Subsequently, the nose landing gear touched down closely followed by the main landing gear and the aircraft bounced back into the air again. A witness reported that this "repeated with increasing force" until, after the third or fourth cycle, the nose landing gear collapsed and the aircraft slid to a halt on the runway.

**2 Aug 2025** **Skyranger Nynja 912S(1)** **G-OCDC** Shipley, Sussex

The pilot reported that, while landing at a private airstrip, the aircraft was caught by a crosswind. The aircraft's wing clipped a bush, and the aircraft passed through a ditch before coming to a halt.

**6 Aug 2025** **Rans S7** **G-TCBX** Compton Abbas Airfield, Wiltshire

As the aircraft approached in the flare the pilot felt a significant amount of sink so applied power. This didn't recover the aircraft in time and it struck the ground causing damage to the landing gear and front fuselage.

**Record-only investigations reviewed: July - August 2025 cont**

**8 Aug 2025** **Beech B36TC Bonanza** **N5073C** Norwich Airport, Norfolk

Shortly after lift off, and as the landing gear was being retracted at approximately 100 ft aal, the engine lost all power. The pilot pitched the aircraft for best glide speed, selected the auxiliary fuel boost pump ON and the landing gear down. However, the landing gear did not reach its fully locked position, collapsed on touchdown and the aircraft slid along the runway before coming to a stop. The pilot advised that even after selecting the auxiliary fuel pump, the engine fuel pressure was indicating zero.

**8 Aug 2025** **Sportcruiser** **G-CGDV** Near Cotes Heath, Staffordshire

The engine started running roughly, became hot and lost 75% of its power. During the subsequent forced landing in a field, one gear leg detached and the tailplane was damaged.

**12 Aug 2025** **Ikarus C42 FB100 Charlie** **G-CMKR** Wycombe Air Park, Buckinghamshire

After takeoff, at approximately 100 ft agl, the engine spluttered. Due to industrial buildings at the end of the runway the pilot opted to land on the remaining runway. The aircraft's rate of descent was high so the pilot applied power to reduce it but the aircraft then began to climb. The pilot cut the power and the aircraft made a hard landing.

**12 Aug 2025** **Replica War FW190** **G-SYFW** Leeds East Airport

On approach to landing the pilot found that the landing gear could not be lowered. They continued the approach and when a landing on the grass runway was assured, they shut down the engine and carried out a successful belly landing.

**13 Aug 2025** **Piper PA-28-140** **G-BCGJ** East Midlands Airport

After completing the after-start checklist, the pilot had to shut down the aircraft and then manually push it back several metres to allow subsequent taxiing around a parked PA28. On re-entering the aircraft the pilot thought they had re-started the pre-start checklist. After starting the engine the pilot was heads down completing the after-start checklist when the aircraft moved forward and struck the parked PA28 . The engine stopped when the propellor struck the other aircraft. The pilot attributed the incident to distraction and interruption of their normal procedures.

**22 Aug 2025** **Shadow Series CD** **G-MWDN** Earl Shilton, Leicestershire

The aircraft suffered considerable damage during a forced landing in a field after the engine lost power for a second time during the flight.

# 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).

# 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.

Unabridged versions of all AAIB Formal Reports, published back to and including 1971, are available in full on the AAIB Website

http://www.aaib.gov.uk

# 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 |

Air Accidents Investigation Branch