

ACCIDENT

Aircraft Type and Registration:	Piper PA-32-301 Saratoga, G-BIWL	
No & Type of Engines:	1 Lycoming IO-540-K1G5 piston engine	
Year of Manufacture:	1981	
Date & Time (UTC):	24 March 2007 at 1158 hrs	
Location:	Scilly Isles (St Mary's) Airport	
Type of Flight:	Private	
Persons on Board:	Crew - 2	Passengers - 2
Injuries:	Crew - None	Passengers - 1 (Serious)
Nature of Damage:	Damaged beyond economic repair	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	64 years	
Commander's Flying Experience:	150 hours (of which 21 were on type) Last 90 days - 4 hours Last 28 days - 3 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquires by the AAIB	

Synopsis

After landing long on Runway 09 at Scilly Isles Airport, G-BIWL bounced slightly. Due to insufficient runway remaining, a go-around was initiated. The aircraft subsequently failed to get airborne, veered left, departed the runway surface and hit a stone wall.

History of the flight

G-BIWL departed Exeter Airport for Scilly Isles Airport with two pilots and two passengers on board at approximately 1100 hrs. After an uneventful VFR cruise the pilot was cleared by ATC to descend to circuit height and join on right base for Runway 09. The weather at Scilly Isles Airport was CAVOK with a surface wind of 040°/9 kt.

The commander stated that he flew a normal final approach at approximately 80 kt with 40 degrees of flap selected. After crossing the perimeter fence he closed the throttle and crossed the threshold at approximately 70 kt. He estimated that the aircraft touched down 80 m from the threshold and then bounced slightly before drifting to the left edge of the runway. As the aircraft approached the asphalt section of the runway (see Figure 1), the commander elected to commence a go-around due to insufficient runway length remaining within which to stop. The co-pilot transmitted this to ATC. The commander selected full power and the engine sounded normal but the aircraft only briefly became airborne again before the left wing dropped. The aircraft

veered to the left on landing before leaving the paved surface of the runway. It continued down a small grass slope, sliding to its right, before impacting a stone wall and stopping.

The co-pilot vacated the aircraft through his door on the right side. The passengers vacated the aircraft without assistance. At the same time the commander isolated the aircraft's electrics and fuel and vacated the aircraft. The ARFS, local police and ambulance were quickly on the scene and offered their assistance.

The passenger seated in the right rear seat suffered a broken left shoulder and a dislocated right shoulder in the impact when the left seat passenger's body crushed him against the cabin wall. Both passengers were wearing lap harnesses only.

Eyewitness information

Air traffic controller's comments

The ATCO in the control tower at the time of the accident witnessed the accident. He stated that having cleared G-BIWL to land he observed it high on the final approach, prior to a rapid descent. It landed firmly abeam the second set of runway side lights from the threshold of Runway 09. He saw the aircraft drift to the left edge of the runway but maintain runway heading. It then became airborne briefly in a nose-up attitude, with the tail almost touching the runway, before settling back onto the grass. As G-BIWL reached the intersection of Runways 15/33 it became airborne again, remaining "very low" in a pronounced nose-up attitude. The left wing dropped and the aircraft "started turning" rapidly

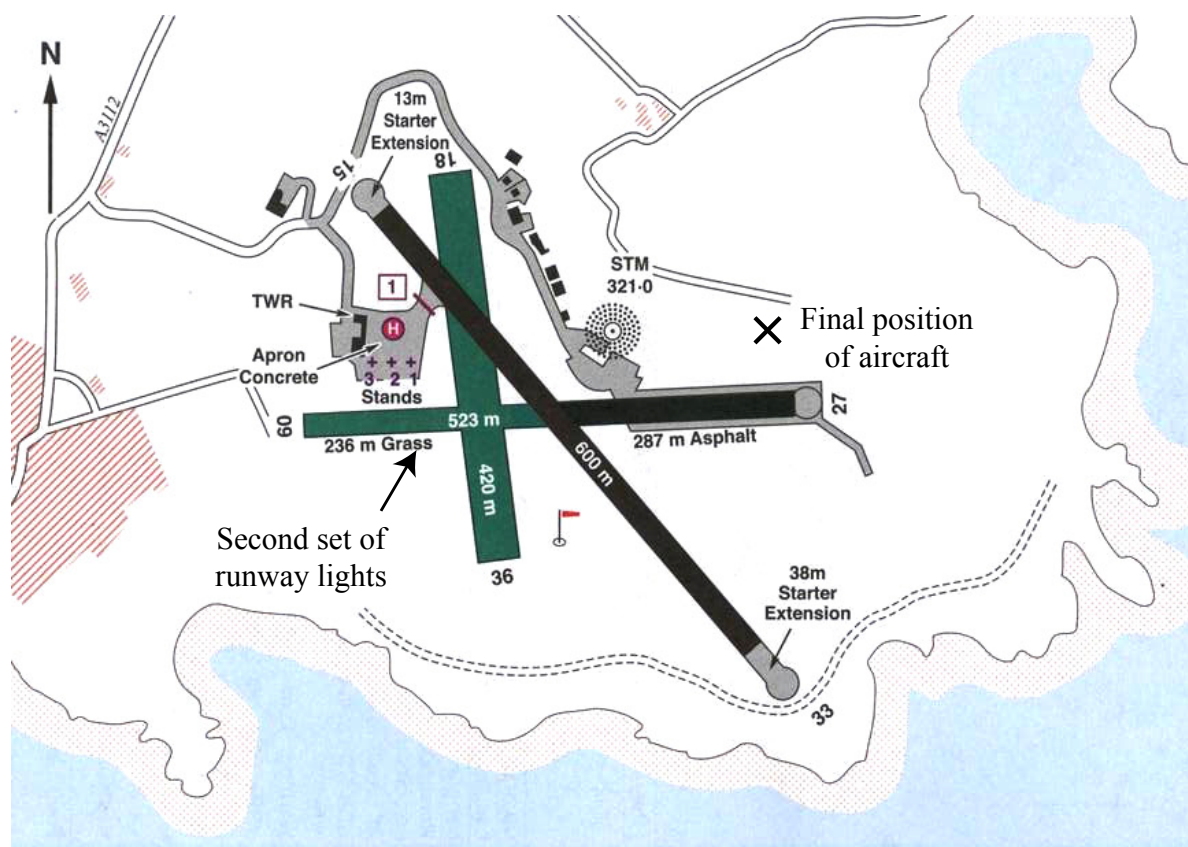


Chart courtesy of R Pooley

Figure 1
Scilly Isles Airport

to the left. The controller was then occupied with initiating the ATC emergency procedures and did not see G-BIWL impact the stone wall.

Passengers' comments

The rear cabin of the Saratoga has two pairs of seats facing each other. There were two passengers in the forward facing seats of the rear cabin, one of whom held a Private Pilot's Licence (PPL) and had landed there on several occasions. They reported that they did not notice anything untoward until the landing. Both recalled that the aircraft seemed to land long and firmly. They were aware of full power being applied and the aircraft briefly becoming airborne again in a nose-high attitude before the left wing dropped. The aircraft then veered left, landed in the field adjacent to the runway and skidded sideways into the wall.

The passenger who held the PPL reported that the co-pilot was advising the commander on the final approach, telling him at one point that it looked as if they were going to land long and that he needed to reduce power. He did not hear any verbal hand over of control during the go-around.

The passenger in the right rear seat thought that the co-pilot took control during the go-around.

Other eyewitnesses

Five eyewitnesses who were near the airport terminal, approximately 80 m north of the threshold of Runway 09, observed the initial part of the accident.

They described the approach as high and fast and the landing as hard. One described the touchdown point as half-way along the grass section of Runway 09. They saw G-BIWL get airborne again in a nose-high attitude, touchdown again and then become airborne for a second

time, again in a nose-high attitude. The eyewitnesses saw the left wing drop just before the aircraft veered left but then lost sight of it as it descended towards a field adjacent to the runway.

Pilots' comments

G-BIWL was jointly owned by the commander, co-pilot and the passenger who was seated in the left rear seat.

Commander's comments

The commander reported that he had not landed at Scilly Isles Airport before and that he did not calculate a Landing Distance Required (LDR) prior to take off. He stated that "both the commander and co-pilot were aware that the shorter runway on the Scilly Isles was within the LDR of the aircraft. The co-pilot had landed there in a similar light aircraft on a previous occasion without incident." Before boarding the aircraft at Exeter, the commander discussed the Scilly Isles Airport runway profile and possible windshear/turbulence with the passenger who held a PPL.

When asked whether the co-pilot took control during the go-around the commander refused to comment, stating only: "I was Pilot in Command and was responsible for the aircraft."

Co-pilot's comments

The co-pilot had 586 hrs total flying of which 122 were on type. He reported that the final approach was flown with 40 degrees of flap and appeared normal. He added that the aircraft landed at approximately 75 kt, half way along the grass section of Runway 09. The aircraft then bounced slightly and drifted to the left edge of the runway but maintained runway heading. As the aircraft reached the top of the rise on the runway, the commander commenced a go-around and

he transmitted this to ATC. Although the commander selected full power, the aircraft did not climb and the aircraft's left wing dropped before it landed back on the left edge of the runway. It then veered left and slid to the right and down a slope before hitting a stone wall. The co-pilot added that the engine sounded as if it was functioning correctly throughout the attempted go-around but at no time did he take control.

The co-pilot reported that "although I have flown similar aircraft onto similar runways in the Scillies, I had not flown this particular aircraft (G-BIWL) into the Scillies before." He also added that "at no time did I take control of the aircraft as I am more than confident in the pilot's ability."

Airfield information (see Figure 1)

Runway 09 at Scilly Isles Airport has a LDA of 523 m. The first 236 m is grass and the remaining 287 m is asphalt. The first 100 m of Runway 09 rises at a 1:20 gradient (5%) and the last 100 m descends at a 1:23 gradient (4.3%). There are no Precision Approach Path Indicators. There is a 100 feet high cliff approximately 400 m beyond the end of the runway, and four runway edge lights on the grass section. The second set of runway lights is half way along the grass which equates to 118 m from the threshold. Runway 15/33 (which the co-pilot had previously used) has a LDA of 600 m.

The UK Aeronautical Information Package (AIP) contains the following warnings for Scilly Isles Airport:

Warnings

a. Pilots should exercise extreme caution when landing or taking-off at this aerodrome, which is markedly hump-backed. The gradients increase to as much as 1 in 13 at runway ends.

b. Pilots are warned of the different braking characteristics of the grass/asphalt sections of Runway 09/27.'

The airport's website advises the following:

'Pilots should exercise extreme caution when landing or taking-off as the aerodrome is severely hump-backed. The gradients increase to as much as 1 in 13 at runway ends. Pilots who have not visited previously are advised to request a low fly past to observe and assess the runway's profile and possible wind shear/turbulence.'

Pilot's operating handbook

The landing performance graph in the Pilot's Operating Handbook (POH) for G-BIWL, indicated that the LDR on a level dry runway, with 40° flap, at 3,300 lb and with 5 kt headwind, is 432 m. CAA Safety Sense Leaflet 7, 'Aeroplane Performance', states the following:

'Landing: It is recommended that the Public Transport factor should be applied for all flights. For landing, this factor is x 1.43 (so that you should be able to land in 70% of the distance available).

*Again when several factors are relevant, they must be **multiplied**. As with take-off, the total distance required may seem surprisingly high.*

You should always ensure that after applying all the relevant factors, including the safety factor, the Landing Distance Required (LDR) from a height of 50 feet does not exceed Landing Distance Available.

Dry grass add another 15%.'

Multiplying the LDR by the Public Transport Factor (as recommended) would make the LDR 617 m.

Discussion

The LDR of 432 m obtained from the landing performance graphs in the POH suggests that with a LDA of 523 m on Runway 09, this landing was, at best, going to be marginal. If this figure was then factored, as recommended in the CAA's Safety Sense Leaflet 7, the LDR exceeds the LDA and the landing should not have been attempted. Landing 118 m in from the threshold would have left the aircraft with insufficient runway remaining to stop using either calculation.

On initial touchdown it should have been apparent that a go-around was necessary but the runway's humpback would have made it difficult to assess the length of runway remaining. Had the crew considered landing performance in more detail before departure and read the advice in the AIP and on the airport's website, they would have been aware how marginal the LDA was and the extra care required due to the runway profile.

The hump-backed nature of the runway can also create a visual illusion that may have caused the commander to misjudge the approach. This may explain the observed high and possibly fast approach and consequent long landing.

The eyewitnesses' description of the accident suggest that once the decision to go-around was made, the aircraft was rotated to a high-nose attitude leading to a large increase in the drag component. The power of the engine was probably insufficient to overcome this and the airspeed decreased. The aircraft then appears to have stalled, as indicated by the left wing drop, before landing back on the runway and sliding across the field into the stone wall. It is probable that the aircraft was over rotated when the commander or the co-pilot became alarmed by the lack of runway remaining and also by the cliff beyond the end of the runway. If the co-pilot did take control, without formally announcing the fact, it is also possible that both pilot's pulling back on the control column may have caused the aircraft to over-rotate.

If there is a need to take control from another pilot, use of the phrase 'I have control', as pilots are taught during their initial training, will reduce the likelihood of simultaneous control inputs.

Although the possibility of an engine problem can not be discounted, given the fact that the occupants of the aircraft and the eyewitnesses said they heard nothing unusual, it is reasonable to assume that the engine was functioning correctly at the time of the accident.