FINAL REPORT

AAIU Synoptic Report No: 2008-009
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In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Air Accidents, on 16 February 2008, appointed Mr. Frank Russell as the Investigator-in-Charge to carry out a Field Investigation into this Accident and prepare a Synoptic Report.

Aircraft Type and Registration:	Piper PA34-200 Seneca II, G-EZYU
No. and Type of Engines:	2 x Lycoming IO-360-CIE6
Aircraft Serial Number:	34-7450110
Year of Manufacture:	1974
Date and Time (UTC):	16 February 2008 @ 16.46 hrs
Location:	Galway Airport
Type of Flight:	Private
Persons on Board:	Crew - One Passengers - One
Injuries:	Crew - Nil Passengers - Nil
Nature of Damage:	Substantial
Commander's Licence:	UK PPL (A)
Commander's Details:	Male, aged 47 years
Commander's Flying Experience:	310 hours, of which 21 hours were on twin-engine aircraft.
Notification Source:	Manager, Galway Airport
Information Source:	AAIU Field Investigation. AAIU Accident Report Form submitted by the Pilot.

SYNOPSIS

While dealing with a perceived technical problem about 20 minutes flying time from Galway Airport, the Pilot became unsure of his position and requested a radar heading to Galway from Shannon Air Traffic Control (ATC). On arrival at Galway the Pilot carried out a landing on Runway (RWY) 08, where the aircraft was observed by ATC to "porpoise" or bounce a number of times, before departing the runway near it's end, onto an open grass area. While the aircraft was substantially damaged, the Pilot and passenger were unhurt. The Airport Fire Services later towed the aircraft to the light aircraft apron.

FINAL REPORT

1. FACTUAL INFORMATION

1.1 History of the Flight

G-EZYU departed Bournemouth Airport (EGHH) on a Visual Flight Rules (VFR) flight to Galway Airport (EICM). This was only the aircraft's second flight, the first being the day before, since completing its Annual Certificate of Airworthiness (C of A) check in the UK in November 2007. Winds en-route were light and easterly in direction. The flight was uneventful until around the Birr area. Here, the Pilot noticed that the pitch controller for the left propeller began to move from its cruise setting of 2300 RPM towards the fine setting of about 2600 RPM. He said that it had been operating normally up to that point. He moved the pitch control back to the cruise position but it continued to move forward of it's own volition to the fine position. While this was happening he looked out at the left engine and saw two screws fully elevated from the engine cowling just behind the propeller. They were standing straight up with washers still around them. He said that after glancing back at the instruments and looking out again, the screws were gone. About this time, also, the Pilot became unsure of his ground position and he called Shannon ATC requesting radar vectors for Galway. This was provided.

As the Pilot flew on towards Galway he continued to manage the RPM fluctuations and was also concerned about the missing cowling screws. After a normal approach to RWY 08, the aircraft was observed by ATC to "porpoise" or bounce a number of times on the runway. The aircraft landed heavily, resulting in a cracked centre frame down the middle of the cockpit windscreen and shattering the right half of the windscreen. In addition, the brakes were not now functioning as a result of heavy landing damage, so the Pilot directed the aircraft off the runway into the grass area, where it came to rest. He switched off all the switches and both he and his passenger exited the aircraft safely. There were no injuries.

The Pilot's post flight inspection of the damage noted that both sets of propellers were bent at their tips, two screws were missing from the left engine cowling and that the windscreen had shattered.

1.2 Aircraft Information

The Seneca is the twin-engine version of the Piper Cherokee Six aircraft and has two counter-rotating engines and propellers. The retractable landing gear is operated by an electro-hydraulic system and includes an emergency extension free fall into the down position. A dual vane stall warning system provides warning by horn and flashing light well in advance of the stall in either "clean" or gear/flaps-down configuration. Two 200 hp Lycoming IO-360 four cylinder horizontally opposed fuel-injection engines, driving Hartzell two-blade metal constant-speed fully feathering propellers, power the aircraft.

1.3 Damage to the Aircraft

Starboard Engine: The tips of the two propeller blades were symmetrically bent backwards as a result of the runway strike and damaged beyond repair. Consequently, the engine needs to be shock tested and inspected before being returned to service. There was no obvious damage to the engine bearer or bulkhead.

Port Engine: The tips of the two propeller blades had jagged edges and were bent slightly forward as a result of a strike on hard compacted gravel at the edge of the runway. They were damaged beyond repair. Consequently, the engine needs to be shock tested and inspected before returning to service. An initial survey of the port engine indicated clean spark plugs, no oil or fluid leakage of any type and the oil adhering to the dipstick appeared clean. There were two screws missing from the top of the nose cowling directly behind the propeller hub.

Fuselage and Wings: The complete nose gear and its attaching frame were found pushed upwards by the heavy landing. The main 'A' frame holding the windscreen centre support penetrated the fibreglass nose of the aircraft and jutted about 4" above that surface (**Photo No. 1 and Figure No. 1**). The right hand windscreen was cracked and broken. There were crease marks on the underwing panel behind the port engine.

Photo No. 1: Showing apex of 'A' frame protruding 4 inches above fuselage nose and the severed windscreen support.

1.4 Tests and Research

The Investigation, assisted by a qualified Seneca contractor, ran the port engine at the light aircraft park at Galway Airport. After allowing some time for the engine oil temperature and pressure to stabilize, the contractor brought the engine speed up to 1800 RPM. At this speed he conducted tests on the propeller pitch, in which he brought the pitch from fine to feather position and back again a number of times. The pitch worked as normal. However, he noted that the friction control handle attached to the cockpit engine control quadrant was in the down position, offering very little friction to the propeller control levers. He considered that with normal aircraft vibration and the friction control handle in such a position in flight, the propeller speed would tend to increase to high RPM. He also noted that the controls to the engine Constant Speed Unit (CSU) from the cockpit appeared to be rigged correctly. As a result of the propeller damage, no further engine tests at higher RPM could be carried out and the engine run concluded.

In response to the friction control handle comment above, the Pilot stated, *"That he was pretty sure that the friction control handle was up during the flight and that he would have put it down on shutdown, as part of his normal shutdown procedures. This would have been a second nature action, he added".*

2. ANALYSIS

The Investigation could not determine any technical malfunction that would cause the pitch control to move from the cruise setting of 2300 RPM towards the fine setting of 2600 RPM. A possible explanation may be in the friction control handle, which was found to be in the down position. In this position, there would have been very little friction on the propeller control lever, hence it's ability to move of it's own accord, as reported by the Pilot.

What had been a routine VFR flight to Galway became problematic around the Birr area. In his debrief to the Investigation. the Pilot said that he was concerned about two loose screws behind the propeller area, as well as the distraction of the RPM movement. In addition, he also became concerned about his position in relation to Galway. From being an earlier uneventful flight, the inexperienced twin engine time Pilot now had to deal with three unconnected items, which distracted him for the remainder of the trip. The approach to RWY 08 was normal; G-EZYU was No.2 in line to a light aircraft ahead. Surface winds at the Airport were 100/05 kt. However, the landing was nose heavy, as reported by ATC and as evidenced by the serious structural damage to the front of the aircraft. The Pilot considered a 'go-around' after the first bounce but, with his continuing concern over the propeller RPM fluctuation in the back of his mind, he decided against this course of action and continued with the bounced landing instead. With hindsight, this was a good decision, as the damaged nose area would have seriously compromised the Pilot's ability to carry out a safe second landing attempt. On reflection, the Pilot accepted that the various unforeseen distractions in the latter part of his flight most probably had a detrimental affect on his concentration at the critical landing phase on RWY 08 at Galway Airport.

3. CONCLUSIONS

(a) Finding

G-EZYU sustained extensive structural damage following a heavy landing on RWY 08 at Galway Airport.

(b) Probable Cause

The Pilot being distracted by the three earlier but unrelated events in the latter part of the flight, leading to his lapse of concentration on landing.

(c) Contributory Factor

The Pilot's overall inexperience in the operation of a multi-engined aircraft.

4. SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendation

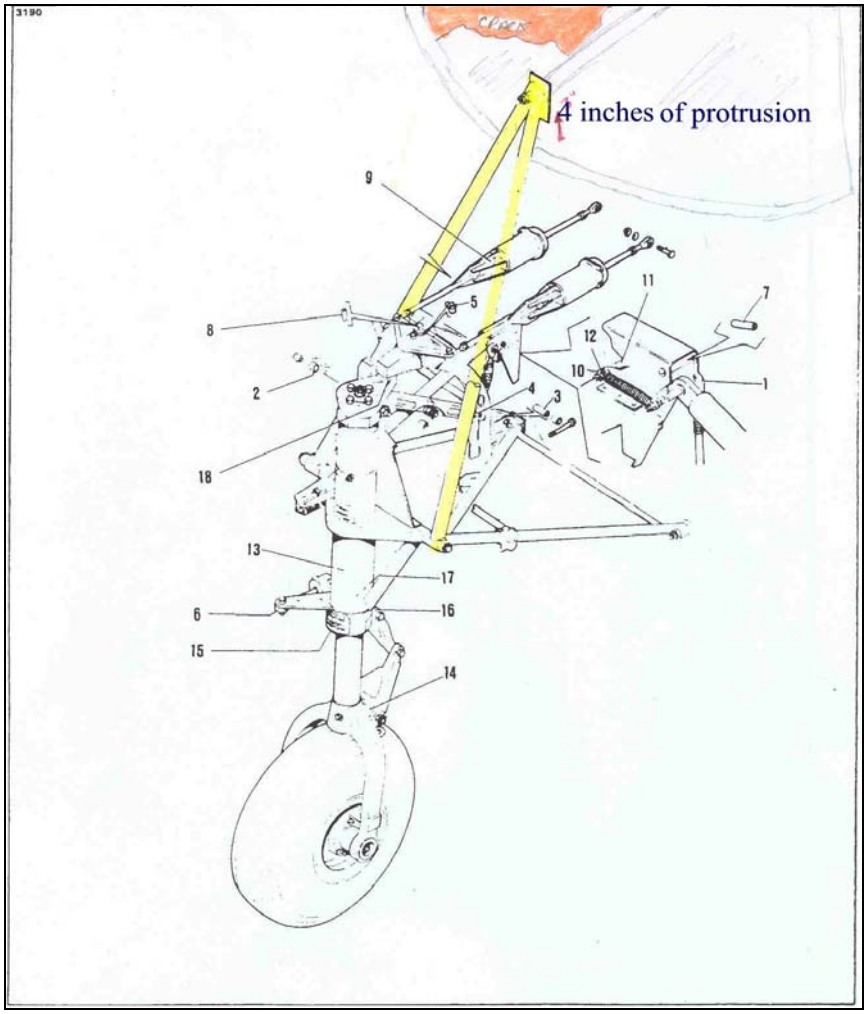

Figure No. 1: Sketch of nose undercarriage support A frame

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