

Accident

Aircraft Type and Registration:	Taylor Monoplane, G-AYSH
No & Type of Engines:	1 Volkswagen 1600 piston engine
Year of Manufacture:	1973 (Serial no: PFA 1413)
Date & Time (UTC):	17 June 2025 at 0936 hrs
Location:	Nayland Airfield, Suffolk
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Fatal) Passengers - N/A
Nature of Damage:	Broken canopy and damage to propeller, left main landing gear and spat
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	82 years
Commander's Flying Experience:	1,522 hours (approximately 1,375 on type) Last 90 days - 11 hours Last 28 days - 4 hours
Information Source:	AAIB Field Investigation

Synopsis

G-AYSH, a Taylor Monoplane, took off from Retreat Farm, Essex, with the intention of landing at Nayland Airfield in Suffolk. After landing, the aircraft departed from the mown landing surface into long grass and came to rest inverted. The right main landing gear shock absorber was found to have seized.

A post-mortem examination indicated that the pilot sustained a fatal heart attack, which the investigation concluded is likely to have occurred after landing.

History of the flight

G-AYSH was owned by the pilot and based at Retreat Farm, also known as Little Baddow Airstrip, Essex. The pilot departed at 0922 hrs with the intention of landing at Nayland Airfield, a site he visited regularly and where he had been expected to arrive at approximately 1100 hrs. After taking off from Runway 28, the aircraft climbed on a north-easterly track. After approximately 5 nm from departure, it descended to about 200 ft agl before climbing again to 1,450 ft amsl near Colchester, where it turned north towards Nayland.

The aircraft subsequently established on a straight-in approach to Runway 32. It touched down just before the runway mid-point, veered to the left, departed the mown landing surface into long grass, and came to rest inverted at approximately 0936 hrs. The pilot was discovered at about 1015 hrs by a club pilot arriving at the airfield, who then raised the alarm. The pilot was found unresponsive.

Accident site

The aircraft had travelled approximately 30 m through long grass to the left of the runway, before nosing over. The aircraft's main landing gear left tracks in the long grass where it departed the runway, starting at approximately 250 m from Runway 32's southern end.

The canopy had broken, with all pieces of transparency found next to the aircraft. There had been a fuel leak, but no fire. The aircraft was righted by first responders.



Figure 1

Aircraft position (after righting), viewed from the Runway 32 direction

Recorded information

Introduction

The flight from Retreat Farm to Nayland was recorded by primary¹ radar sites at Stansted Airport, and RAF Wattisham, which were 23 nm to the east of Nayland and 10 nm to the north-north-east respectively. Both radars detected the aircraft shortly after it had taken off, and the aircraft subsequently descended below radar coverage when it was about 1 nm south of Nayland.

Footnote

¹ Primary radar provides the track of an aircraft over the ground but not its altitude.

An Airbox Aware GPS unit was also recovered from the cockpit of the aircraft. The device was developed as part of a joint initiative with NATS² in 2009 and provided a moving map display. It also included a recording function which logged GPS-derived position, altitude and groundspeed of the aircraft, once every 10 seconds. The GPS data log was recovered from the unit and decoded with the assistance of its manufacturer. The recording included the accident flight and other flights dating back to July 2020. Of these, 24 were to Nayland.

The aircraft's GPS and radar tracks predominantly correlated with each other, although it was noted that there was some variation at times. This is most likely due to a number of factors, including the relative accuracy of primary radar, the aircraft's distance from the radar head and its radar signature.

GPS devices determine their position by measuring the distance to multiple satellites, with a minimum of four satellite signals required for a GPS receiver to determine its 3D position (latitude, longitude, and altitude). GPS-derived altitude is generally less accurate than barometric altitude as its accuracy can be affected by signal obstructions and atmospheric conditions. The barometric altitude of the aircraft was not recorded, either by the GPS unit or by radar as the aircraft was not equipped with a transponder.

A review of the GPS data showed variance in the recorded altitude when the aircraft was on the ground at the same location but on different dates. The deviation in the data was also not constant (linear), such that the aircraft's altitude on the ground at the departure airfield could underread the actual terrain elevation, but when on the ground at the destination airfield it would overread, and vice versa.

The terrain elevation near the threshold of Retreat Farm Runway 28 is approximately 70 ft amsl. However, the recorded data during the accident flight showed that when the aircraft was close to this position, the recorded GPS-derived altitude was 113 ft amsl (an overread of +43 ft). Several GPS data points were also recorded at Nayland after the aircraft had come to a stop. The GPS-position of these data points were about 55 m north of where the aircraft had actually come to rest. Additionally, the GPS-derived altitude for these data points was 225 ft amsl, whereas the actual elevation of where the aircraft came to rest was about 160 ft amsl (an overread of +65 ft).

Some GPS devices record additional parameters that indicate the vertical and horizontal accuracy³ of the recorded data, but these were not recorded by the GPS unit. To compensate for the deviation in the GPS-derived altitude during the final data points, an adjustment of -65 ft has been applied. GPS-derived groundspeed was also recorded by the unit and this correlated closely with that derived from the radar data.

Footnote

² The device was intended to be affordable and help reduce airspace infringements at airports by improving situational awareness.

³ Vertical and horizontal dilution of precision (HDOP and VDOP), provide a measure of how satellite geometry affects the accuracy of altitude (vertical position) and horizontal positions in GPS or GNSS system positioning. Lower HDOP and VDOP values indicates better satellite geometry and, consequently, higher accuracy in determining the position.

Data interpretation

The aircraft took off from Retreat Farm, Runway 28 at 0922 hrs and made a gradual climbing right turn onto a north-easterly heading towards Colchester. It initially climbed to about 800 ft amsl but about five minutes into the flight, when at a distance of about 5 nm from Retreat Farm, the aircraft started to gradually descend at a rate of about 480 ft/min. As it passed between the villages of Tiptree and Kelvedon (Figure 2) the aircraft had descended to 320 ft amsl (about 200 ft agl), but then climbed away progressively; the time was 0928:15 hrs. As the aircraft reached Colchester, it reached an altitude of about 1,450 ft amsl, at which point it altered course towards the north, whilst also starting to gradually descend.

When the aircraft was 1.6 nm from the airfield, it turned onto an inbound course for Runway 32. At this point the aircraft was at an altitude of 1,050 ft amsl and its average descent rate was about 580 ft/min. As the aircraft approached the runway, its airspeed gradually started to reduce and when it was approximately 250 m from the runway threshold (Figure 3), its estimated airspeed was about 64 kt and it was at approximately 230 ft amsl (a height of about 180 ft agl). The next GPS-derived data point was positioned overhead the runway, with the aircraft at a height of approximately 70 ft agl and with an estimated airspeed of 62 kt. The next GPS data point, recorded 10 seconds later, showed that the aircraft was no longer on the runway, but in the long grass to the left of it, and travelling at a ground speed of 40 kt; the time was 0935:55 hrs. The next GPS data points were recorded at the identical position but with the aircraft no longer moving.

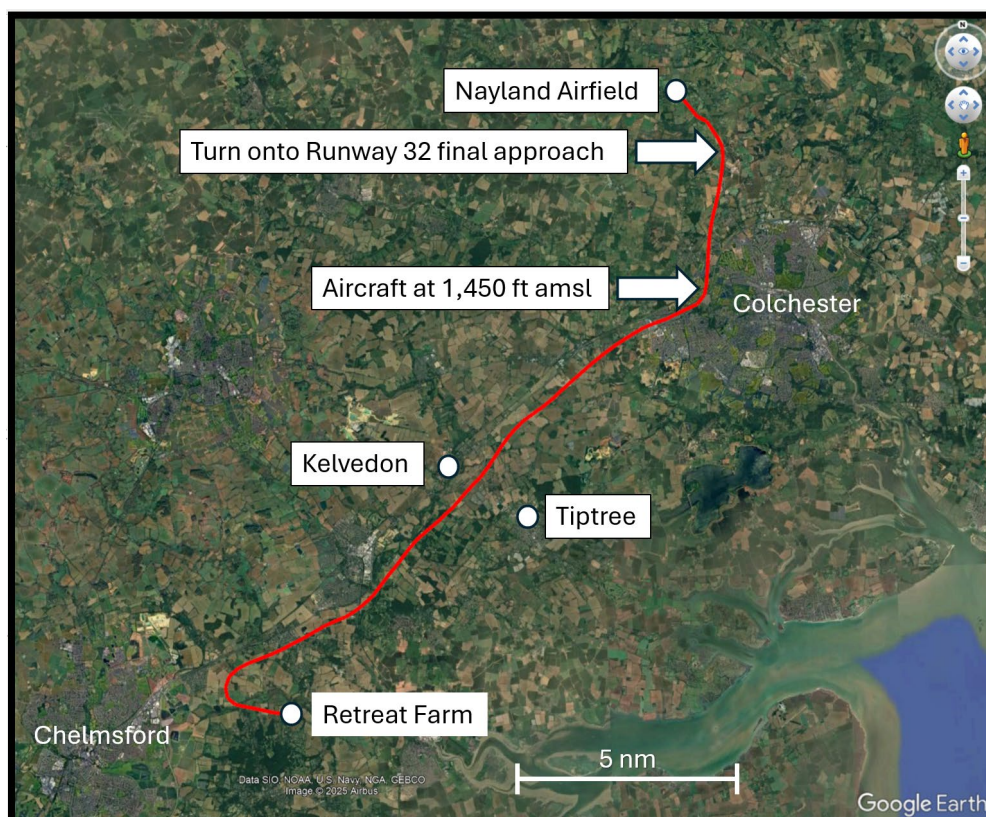


Figure 2

GPS track from Retreat Farm to Nayland

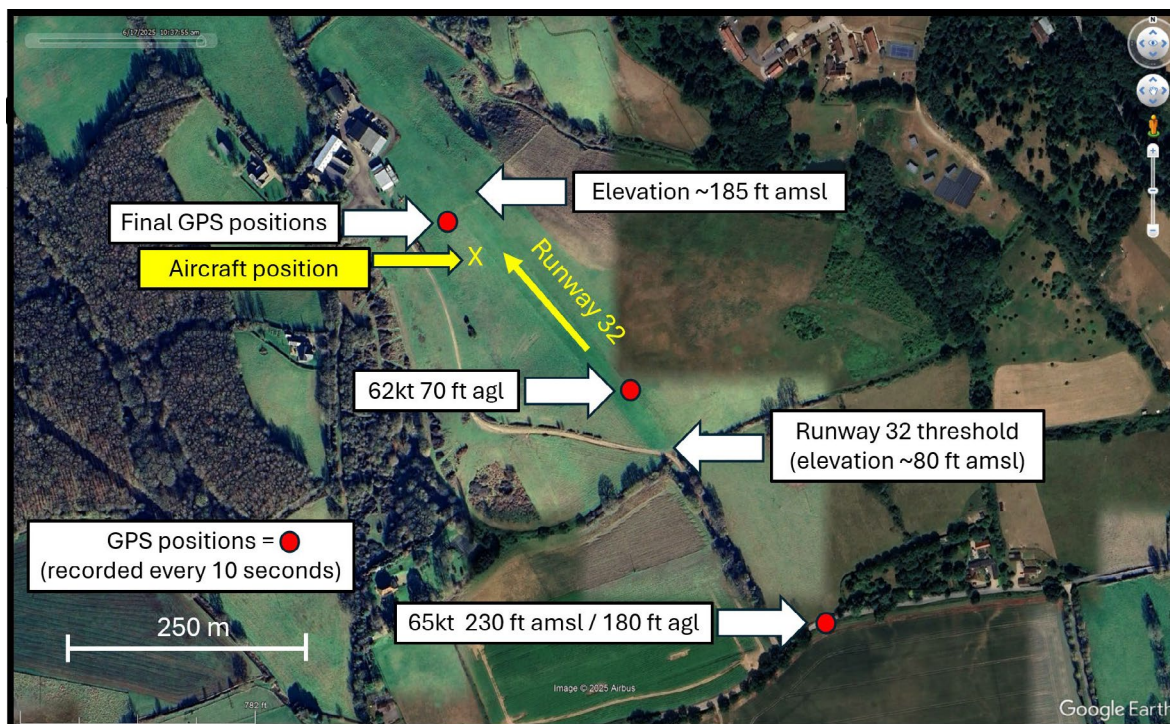


Figure 3
Final GPS points

Previous flights to Nayland

GPS data for the previous landings at Nayland showed that the pilot had flown straight-in approaches as well as overhead joins to land on Runway 32.

A review of the six previous landings at Nayland (26 April 2025, 17 August 2024, 11 November 2023, 5 October 2023, 30 September 2023 and 23 September 2023) showed that the aircraft's position, height and speed during the final stages of the approach were consistent with that during the accident approach.

The data also showed that during these flights, the pilot on several occasions had also descended when approaching the villages of Tiptree and Kelvedon; reaching a minimum height of about 500 ft agl. During two of the flights, he had orbited in the area before flying on to land at Nayland.

Aircraft information

The Taylor Monoplane is a single-seat plans-built aircraft, of wooden construction. G-AYSH was constructed by the pilot in 1971, had flown 1,375 airframe hours, and had a valid Permit to Fly. The aircraft is fitted with a VW 1600 engine and wooden propeller.

Landing gear

G-AYSH has a fixed tailwheel, and main landing gear fitted with telescopic sprung shock-absorbers. The main landing gear design is specific to this aircraft. The mainwheel, brake and spat are mounted to a lower cylinder housing and axle assembly.

A cylinder containing two springs fits within the cylinder housing, and into an upper mounting affixed to the wing spar. Scissor links attach the cylinder housing to the upper mounting.

Upon compression, the cylinder housing slides over the cylinder. A metering pin in the cylinder housing pushes against a collar in the cylinder, compressing the springs to provide shock absorption. An aluminium sleeve fitted to the outside of the cylinder moves with the compression within the cylinder housing, exposing orifices along the cylinder's length. Oil travels up through the metering pin, exiting via the orifices to provide lubrication and a level of damping. This action is shown in Figure 4.

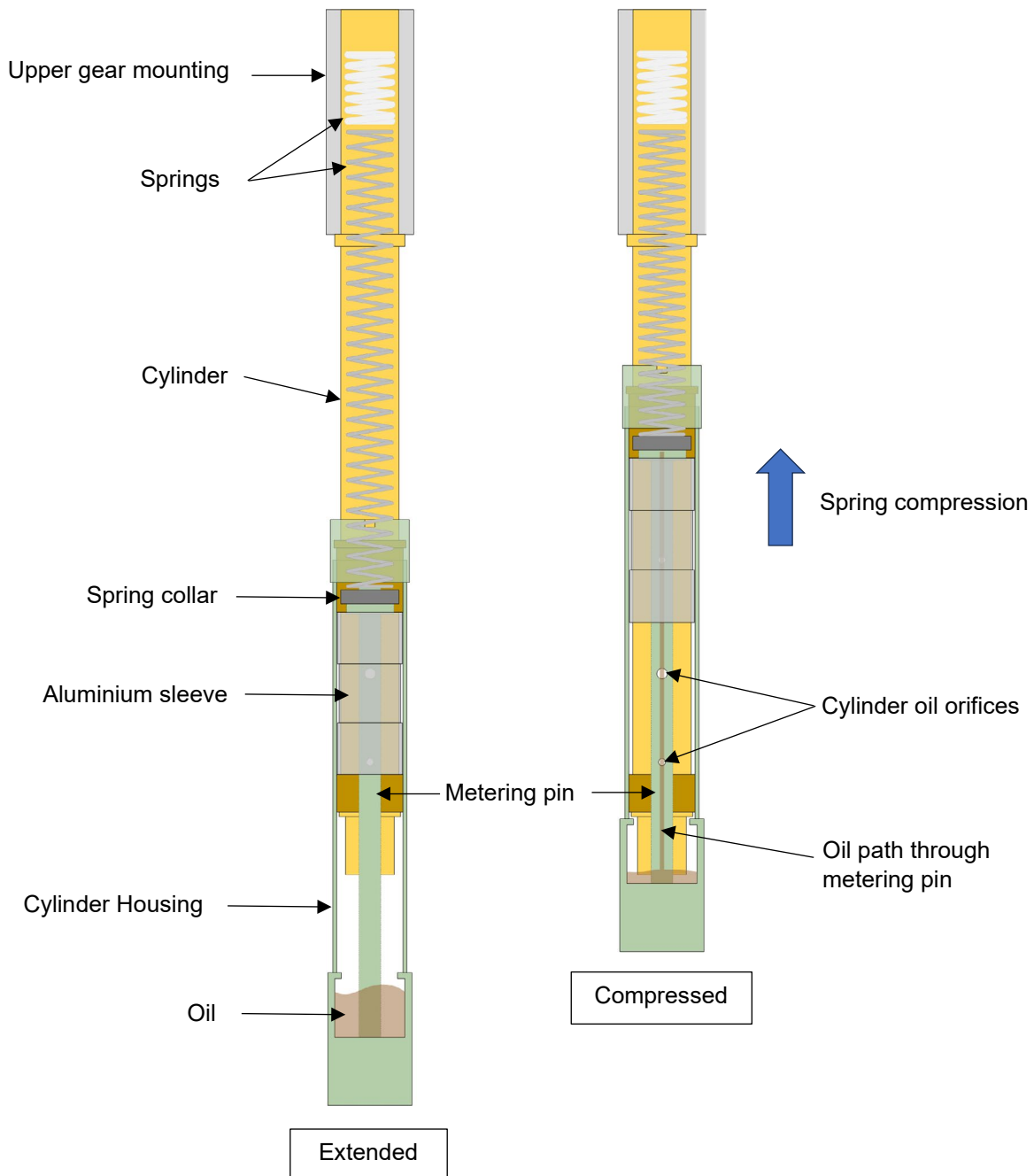


Figure 4

G-AYSH main landing gear shock absorber operation

Aircraft examination

General

All flying controls were found to be connected and operated as expected. The rudder had sustained some damage to its tip and was jammed in a slight left deflection. G-AYSH was fitted with flaps and these had been deployed to their first setting.

The propeller and spinner were attached. One blade was split along its length from the centre of the tip, while the other was undamaged.

The throttle, choke and alternate air cable controls were all connected, and operated as expected. Fuel was present, and approximately 25 litres was drained from the fuel tank.

The canopy frame was damaged, and the transparency was broken into multiple pieces. The fixed tailwheel was undamaged.

Main landing gear

Both main landing gears were attached, turned freely, and fitted with tyres in good condition. The left wheel spat was cracked and distorted while the right spat was undamaged. Both main landing gear brakes were connected to the brake pedals and were functional.

The left main landing gear cylinder showed evidence of compression, identified by a defined line in the grease accumulation (Figure 5). There was a cleaner, lightly oiled section of outer surface where it slides into the cylinder housing. With light downward force applied, the gear compressed freely and returned to its extended position unaided.



Figure 5

Left and right gear cylinders

The right main landing gear's cylinder surface in comparison was drier with a poorer finish. Light downward force was applied, but the cylinder was found to be seized in position. With

further force, the gear compressed but did not rebound, remaining in its compressed state. It was possible to re-extend the cylinder by hand. Approximately 35 ml of oil was drained from the left cylinder housing, and 15 ml of oil from the right.

The left and right main landing gear assemblies were removed from the aircraft and stripped to their component parts. Both left and right cylinders and cylinder housings were measured for alignment.

Right landing gear

The right cylinder was found to be out-of-true by 8.24 mm between centres over its length. The mid-point deflection from centreline to outer surface was 4.17 mm (Figure 6).

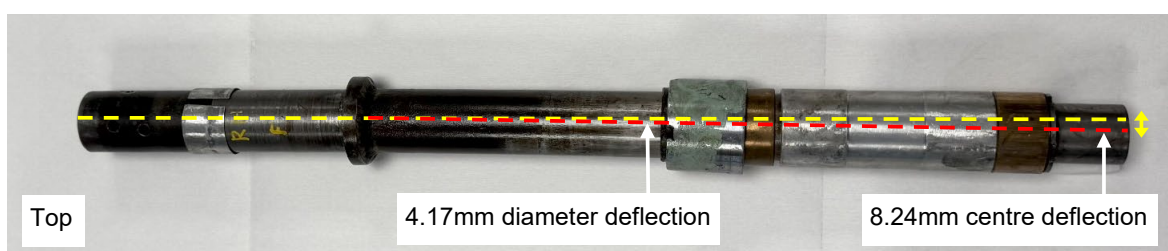


Figure 6
Right cylinder measurement

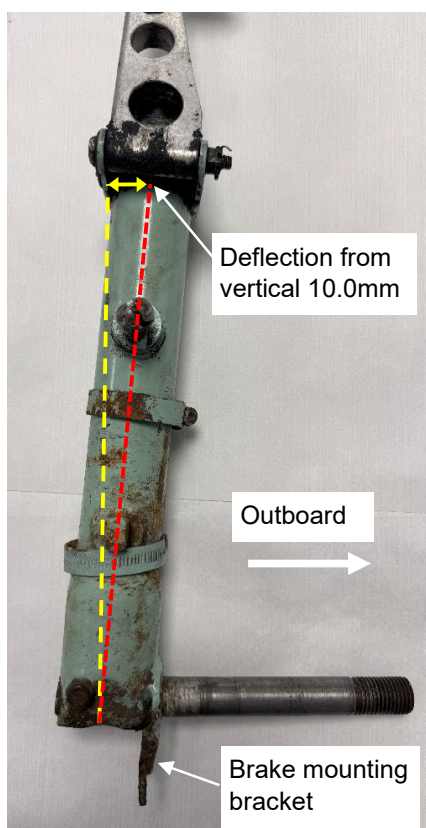


Figure 7
Right cylinder housing measurement

The top of the cylinder housing was deflected 10.0 mm outboard in comparison with the base (Figure 7). The brake mounting bracket on the bottom of the cylinder had been damaged previously and a welded repair applied, which was overpainted.

Inside the right cylinder, there were witness marks from the springs fretting against the inner surface. The longer main spring showed corresponding areas of wear on the outside of the coils (Figure 8). The shorter spring's outside edges had been ground to a squared-off finish; the inside edges of the coils were rounded. The outer coil surface finish was rough, and they were not consistently circular in shape.

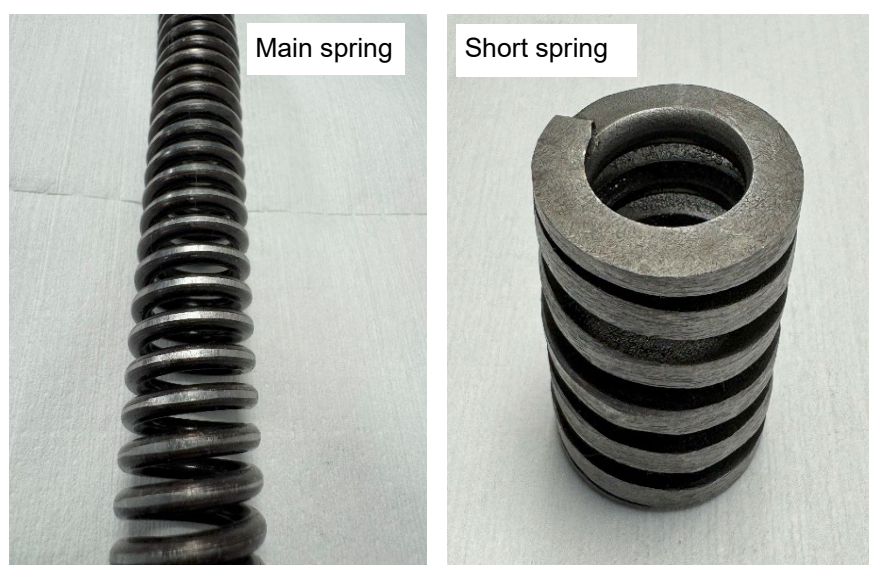


Figure 8

Right landing gear springs

Left landing gear

The left cylinder had a 0.3 mm deflection measured at its mid-point and the cylinder housing was straight. There were some small areas of fretting between the longer spring's outer edges and the inner surface of the oleo. The shorter spring was similar in appearance to that in the right cylinder.

Airfield information

Nayland is a privately owned, unlicensed airfield located five nautical miles north-west of Colchester, at an elevation of 180 ft amsl. The preferred method of joining the circuit for Runway 32 is via the overhead, into a left-hand circuit. Runway 32 has an upslope gradient of approximately 5.5 % over its length. However, the initial 320 m has an upslope of about 9.5 %. The touchdown point and final position of G-AYSH were not visible from the clubhouse (Figure 9).



Figure 9

Nayland Airfield looking along Runway 32

Pilot information

The pilot held a current NPPL(A), issued in 2008 with a Simple Single Engine Aircraft rating. He had flown approximately 1,522 hours, of which the majority were on G-AYSH.

Medical

Pilot medical declaration

The pilot submitted a Pilot Medical Declaration in February 2024, which was valid until February 2027.

Post-mortem report

Post-mortem examination of the pilot concluded that he died as a result of a heart attack.

Analysis

The flight

The pilot was a frequent visitor to Nayland, his most recent flight there taking place on 26 April 2025. A post-mortem examination determined that he died of natural causes; however, the investigation could not conclusively establish the point at which the fatal medical event occurred. The descent to approximately 200 ft agl near the villages of Tiptree and Kelvedon does not appear to indicate partial incapacitation or distraction due to a developing medical condition, as data from previous flights show similar flight profiles, including orbits

in the area. Furthermore, the pilot subsequently climbed to 1,450 ft and continued towards Nayland for an additional eight minutes rather than returning to Retreat Farm or carrying out a precautionary landing in a nearby field. Although the normal procedure was to join the circuit via the overhead, he had made straight-in approaches on previous occasions. A review of the six previous landings at Nayland showed that the aircraft's position, height, and speed during the final stages of the approach were consistent with the profile of the accident flight.

The investigation concluded that the pilot likely suffered a fatal heart attack at some point after landing at Nayland. He was not discovered for approximately 39 minutes after landing because the aircraft was not visible from the clubhouse due to the upsloping runway, and his arrival was not expected until 1100 hrs. Consequently, the straight-in approach, landing and subsequent departure from the runway went unnoticed.

Engineering

The aircraft appeared to have been configured for landing with a stage of flap deployed. All flight control surfaces and engine control continuity was established, with no evidence of any pre-existing restrictions. The damage to the propeller corresponded with the blade's tip striking soft ground and stopping within one rotation. This was likely as the aircraft nosed over. The canopy damage was proportionate with the nose-over event and actions of the first responders. There were no significant ground marks on the runway surface to suggest a heavy landing.

The right main landing gear shock absorber was found to be partially seized and had no rebound. Examination revealed that both the cylinder housing and the cylinder were bent outboard, likely from a historic event due to the amount of main spring outer coil wear and the presence of an overpainted repair. The misalignment of the cylinder and housing led to reduced ability for the cylinder and sleeve assembly to slide within the cylinder housing, resulting in an imbalance in compression between the right and left landing gear assemblies. The condition of the right leg cylinder's outer surface in comparison to the left indicates it may have had restricted compression for some time. The reduced amount of oil recovered from the right cylinder housing would have had contributed to a lower level of damping available if the cylinder was moving normally.

If the left shock absorber compressed as usual but the right was seized during the landing of the accident flight, it is possible that this could contribute to a left veer on landing.

Conclusion

Shortly after landing, G-AYSH departed from the landing surface into long grass and inverted. The right main landing gear shock absorber was found to have seized, which may have contributed to the aircraft veering to the left during landing.

The pilot sustained a fatal heart attack, which the investigation concluded likely occurred after the landing.

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