ACCIDENT

Aircraft Type and Registration:	Piper PA-44-180, G-BGCO
No & Type of Engines:	2 Lycoming O-360-E1A6D piston engines
Year of Manufacture:	1978 (Serial no: 44-7995128)
Date & Time (UTC):	12 February 2021 at 1310 hrs
Location:	Blackpool Airport, Lancashire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damaged beyond economic repair.
Commander's Licence:	Commercial Pilot's Licence
Commander's Age:	70 years
Commander's Flying Experience:	16,500 hours (of which 1,000 were on type) Last 90 days - 45 hours Last 28 days - 17 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

During an approach to Warton Airfield the landing gear was selected down but the nose landing gear did not lock down. Despite use of the emergency lowering system and repeated efforts to lower the landing gear, the situation could not be resolved. The aircraft diverted to Blackpool Airport where engineering support for the aircraft was available. The nose landing gear collapsed on touchdown.

It is likely that distortion or failure of a 'pivot bolt' in the nose landing gear was sufficient to prevent the nose landing gear locking down.

History of the flight

The aircraft, a twin-engine low-wing monoplane (Figure 1), had been conducting a routine, local flight in the Warton area. During the recovery to the airfield the landing gear was selected down.

Both main landing gear legs indicated locked down with green indicator lights but the nose landing gear leg showed not locked with a gear unsafe indication. The pilot followed the POH checklist actions, which included recycling the landing gear selection and changing the indicator bulbs, but this did not resolve the problem. The pilot then recycled the landing gear selection using varying applications of positive and negative g in an effort to force the nose landing gear down. On every selection the nosewheel was seen to

travel using a mirror on the engine cowling, and on each occasion it appeared fully down although the gear unsafe indication remained. The aircraft was flown past the ATC tower for external observation and the nose landing gear appeared to be down. The landing gear emergency down lever was pulled but the indications remained, showing both main landing gear legs locked down but the nose landing gear not locked.

Figure 1

Piper PA-44-180 Seminole

After consultation over RTF with the factory test pilot at Warton, it was decided to fly the aircraft to Blackpool Airport where suitable engineering facilities were available. The aircraft landed on Runway 10 at Blackpool, the nose landing gear collapsed on touchdown and the aircraft came to rest with its nose on the ground (Figure 2). Damage was sustained to both engines, both propellors and the nose landing gear. The pilot was able to vacate the aircraft via the cockpit door and was uninjured.

Figure 2

Aircraft after landing

Technical Information

The aircraft was recovered to the maintenance facilities at Blackpool. When on jacks the landing gear emergency system was reset and the gear raised. On the first attempt to lower the landing gear, using only battery power, the main legs locked down but the nose landing gear indicated unsafe. A second attempt was made with the aircraft connected to a ground electrical supply and the landing gear lowered correctly. During test of the emergency gear lowering system, which relies on gravity and a spring assist, the nose landing gear did not travel from its raised position. The operator stated that significant force from the maintenance engineer was required to pull the nosewheel down, and that the 'pivot bolt' joining the upper and lower landing gear drag link assemblies could not be removed. The operator was aware of previous incidences where distortion or failure of the pivot bolt had occurred.

The damage to the aircraft was assessed as being beyond economic repair, so no further technical investigation into the cause was carried out.

Analysis

The pilot had anticipated the possibility of the nose landing gear collapsing on touchdown and diverted the aircraft to Blackpool so that suitable engineering facilities would be available after landing to support the recovery of the aircraft. The collapse of the nose landing gear precipitated the damage to the engines, propellers and nose landing gear but the aircraft was brought to a safe halt on the runway.

During ground testing the landing gear failed to operate correctly on battery power or through use of the emergency system. There have been previous incidences of distortion or failure of the pivot bolt connecting the upper and lower drag assemblies, and it is likely that this contributed to the difficulty in moving the nose landing gear in the hangar and it not lowering correctly in flight.

Conclusion

It is likely that damage to the pivot bolt in the nose landing gear was sufficient to restrict movement and prevent the nose landing gear locking down.