ACCIDENT

Aircraft Type and Registration:	Beech A36 Bonanza, G-CDJV
No & Type of Engines:	1 Continental Motors Corp I0-520-BA piston engine
Year of Manufacture:	1976
Date & Time (UTC):	25 June 2008 at 1640 hrs
Location:	Lydd Airport, Kent
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of the Damage:	Damage to left wing and landing gear door
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	53 years
Commander's Flying Experience:	12,000 hours (of which 600 were on type) Last 90 days - 150 hours Last 28 days - 50 hours
Information Source:	AAIB Field Investigation

Synopsis

When the landing gear was selected DOWN a loud mechanical noise was heard and no green landing gear 'down and locked' lights illuminated. The pilot recycled the landing gear twice and the nose and right landing gear 'down and locked' lights illuminated, but not the light for the left landing gear. After two low flights past ATC the pilot was told that all three landing gear legs looked correctly extended but towards the end of the landing roll the left landing gear collapsed. Components in the left landing gear system were found to be seized and restricted in movement. A similar accident, to a Beech 58 Baron, G-OSDI, is also published in this Bulletin.

History of the flight

After takeoff from Lydd Airport the pilot retracted the landing gear normally. When the landing gear was selected DOWN during the approach phase to the destination airfield a loud mechanical noise was heard and no green landing gear 'down and locked' lights illuminated. The pilot recycled the landing gear. The retraction phase appeared normal and the extension phase produced illuminated nose and right landing gear 'down and locked' lights. The pilot recycled the landing gear once more and this time the extension phase was accompanied by a loud and unusual noise, and again only the nose and right landing gear 'down and locked' lights illuminated.

The pilot then conducted a low flight past the control

tower and the controller informed him that all three landing gears were extended and appeared normal. The pilot suspected that he had a problem with the landing gear and decided to return to his departure airfield, Lydd, where the wind direction was more favourable and he could burn off fuel. During the return flight, with the landing gear extended, he attempted to extend the landing gear manually but only managed half a turn with the emergency landing gear extension handle before coming up against what he felt was a mechanical limit. The pilot also checked the Emergency Procedures in the Airplane Flight Manual (AFM) but found that there was not a procedure for this situation.

On contact with ATC at Lydd the pilot advised the controller of the situation and requested him to alert the rescue and firefighting service (RFFS). Following his arrival at the airfield the pilot carried out a low flight past the control tower and the RFFS confirmed that all three landing gears appeared to be in their down and locked positions. After a stable approach, with full flap, the aircraft touched down gently on the right landing gear and, with the use of aileron, the pilot kept the weight off the left gear for as long as possible. As the airspeed decreased and the weight went onto the left gear, it slowly collapsed and, at about 10 kt, the left flap contacted the ground and the aircraft slewed to the left, off the runway. The pilot switched off all the electrical systems and, when the aircraft had come to rest, he left via the right door.

Previous landing gear problem

On the previous flight of G-CDJV, some 10 weeks prior to the accident, the same pilot had heard a loud mechanical noise as he lowered the landing gear. This was followed by only the nose and right landing gear 'down and locked' lights illuminating. After an uneventful landing he had taxied the aircraft to the apron and reported the problem to the resident maintenance organisation who, upon examination, found that the left landing gear extension/retraction rod (Figure 1) was bent in two places and the landing gear downlock was not engaged. The engineers were surprised that the left landing gear had not collapsed during the landing. The extension/retraction rod was replaced, the landing gear system inspected, retraction/extension cycles performed and no further fault was found.

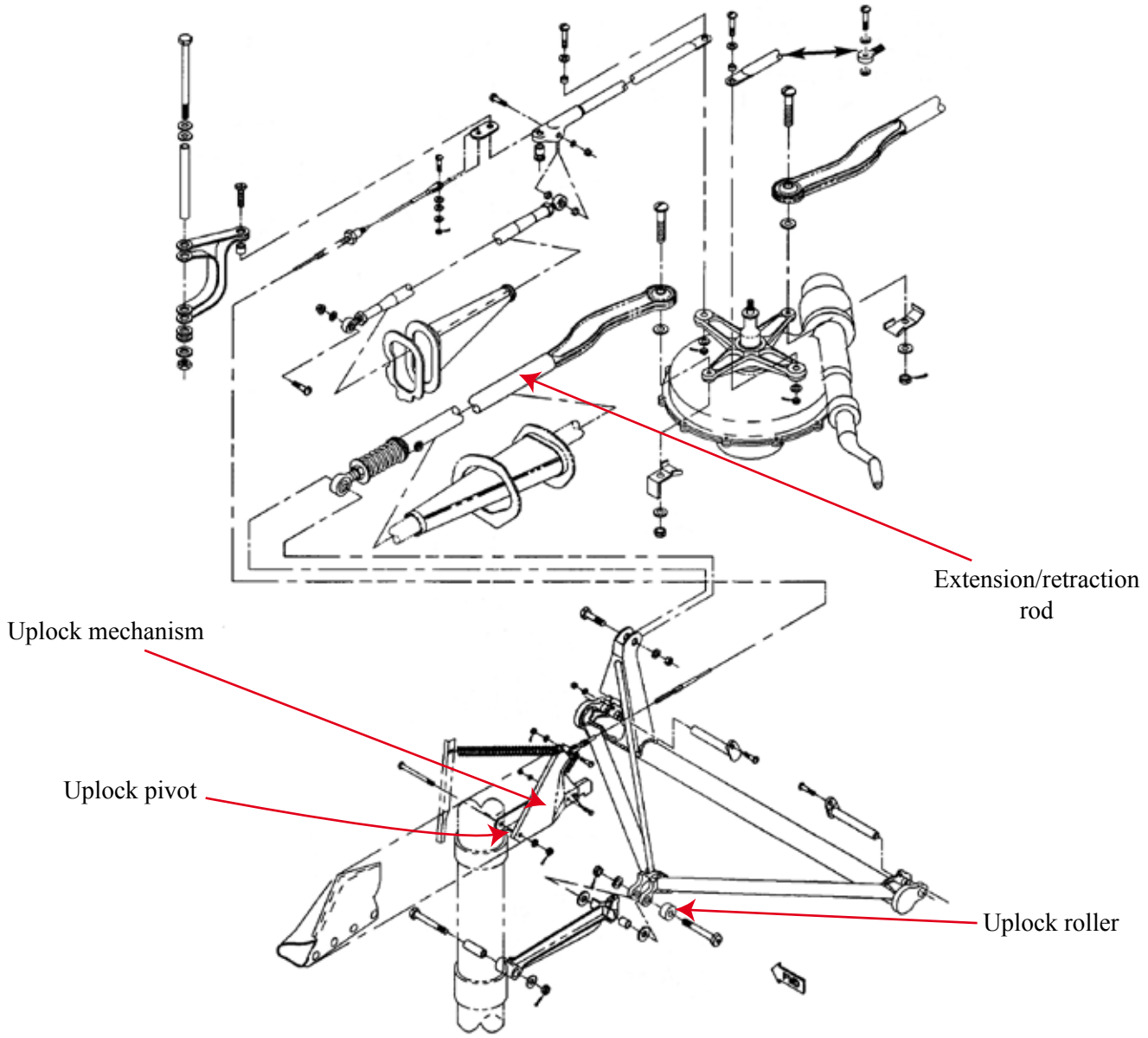
Engineering examination

A description of the landing gear system in the Beech Baron, which is similar to the system in this aircraft, is given in the account of G-OSDI, also published in this Bulletin.

Initial examination of the aircraft was carried out by the same maintenance organisation that had repaired the aircraft following the previous landing gear problem and they found that the replacement left landing gear extension/retraction rod had bent in an almost identical way to the previous rod. Further examination revealed that the landing gear lock mechanism (Figure 1) was not free to move around its pivot, due to corrosion and lack of lubrication and that the uplock roller was seized. Examination of the right landing gear revealed that the lock mechanism had restricted movement around its pivot and the uplock roller was very stiff to rotate. Both uplock rollers were of the latest standard, which incorporate grease points in the form of grease nipples.

Maintenance

The aircraft had been maintained in accordance with CAP 411, the Light Aircraft Maintenance Schedule – Aeroplanes (LAMS) issue 2 and a 50-hour check was carried out on 21 January 2008 and an Annual check on 19 June 2007. When this accident occurred the aircraft had flown 7 and 45 hours respectively since these



Adapted from a manufacturer's drawing

Figure 1

Main Landing Gear Mechanism

maintenance checks. The aircraft manufacturer requires the re-greasing of the uplock rollers every 100 flight hours, or 12 months, and this was accomplished during the annual check carried out in June 2007. There were no specific inspection/maintenance requirements for the main landing gear lock mechanism pivot.

Similar occurrence

In April 2008 a Beech B58 Baron aircraft, G-OSDI, (see page 34 of the Bulletin) had a right landing gear collapse following a failure to obtain a right landing gear 'down and locked' indication. Examination of the landing gear system revealed that the right landing gear

extension/retraction rod, which is almost identical to the rod fitted to the Beech A36 Bonanza aircraft, had bent in a way that was very similar to the extension/retraction rods from G-CDJV. The right landing gear uplock roller fitted to G-OSDI was found to be seized. The operation and components of the landing gear systems fitted to the Beech B58 Baron and A36 Bonanza aircraft are similar.

Airplane Flight Manual (AFM)

The Airplane Flight Manual for the Beech B58 Baron has a requirement in the Pre-flight Inspection part of Section IV to '*Check the landing gear uplock rollers'*. There is no similar requirement in the Airframe Flight Manual for the Beech A36 Bonanza. There is no specific requirement in the LAMS Check A to 'check' or 'inspect' retractable landing gear lock mechanisms.

Safety action

The aircraft manufacturer, Hawker Beechcraft, has reviewed this accident and intends to include the uplock roller mechanism in the Pre-flight Inspection section of the A36 AFM.

Other information

The aircraft was parked in the open mainly at airfields which were located very near to the coast. The manufacturer's Maintenance Manual states:

> *'Airplanes operated in extremely humid tropics, or in exceptionally cold, damp climates, etc., may need more frequent inspections for wear, corrosion, lubrication, and/or lack of maintenance. Under these adverse conditions, perform periodic inspections in compliance with this guide at more frequent intervals until the operator can set his own inspection periods based on the contingencies of field experience.'*

There is no similar statement in LAMS.