

# Trouble Checking

## Fuel Starvation

The Cessna A185E Skywagon took off from Motueka Aerodrome on a local parachuting flight. Shortly after takeoff, at about 100 feet, a sudden and total power loss was experienced. Unable to re-establish power, the pilot guided the aircraft to a nearby kiwifruit orchard. The aircraft struck the ground heavily after clipping trees, resulting in the pilot and four parachutists receiving serious injuries. A fifth parachutist sustained minor injuries. The aircraft was substantially damaged.

The power loss was due to the pilot inadvertently selecting the fuel to OFF before the flight, because of his unfamiliarity with the aircraft's fuel selection system. Unfortunately, sufficient fuel remained in the accumulator tank (3.28 litres) to allow the aircraft to complete its pre-takeoff checks, taxi, takeoff and climb to approximately 100 feet before the engine was starved of fuel.

## Findings and Recommendations

In its accident report, the Transport Accident Investigation Commission identified a number of reasons why the pilot inadvertently selected fuel OFF prior to takeoff. These included:

- the absence of labelling confirming the available fuel selection positions;
- the absence of a cover preventing the fuel from inadvertently being turned off (achieved by rotating the selector lever to the rearward position); and
- the assumption by the pilot that he could select BOTH by rotating the selector to the rearward position.

Note that this model of Cessna has LEFT, RIGHT and BOTH options only – it has no OFF position. Fuel cut-off is normally achieved by activating a separate fuel cut-off control lever. Rotating the fuel selector to the rearward position does, however, cause the fuel flow to stop.

The report went on to recommend that pilots be reminded of the importance, if time permits, of changing fuel tanks (if applicable to aircraft type) following an unexplained power loss shortly after takeoff.

## Prioritising Your Actions

While changing the fuel tanks probably would not have restored the fuel flow in time to restart the engine on this particular occasion, and the pilot correctly concentrated his efforts on directing the aircraft to the most suitable forced landing area, it does remind us of the importance of carrying out the engine-trouble checks (FMIIP) **if time permits**.

A large percentage of partial power losses or total engine failures (especially for normally aspirated engines) are caused by a fuel problem, induction icing, or an ignition system problem. Therefore it makes sense, if time permits, to start the engine-trouble checking process as soon as possible, to maximise the chances of restoring power before becoming committed to a forced landing. Fuel flow can take a considerable amount of



Photograph courtesy of TAIC

time (up to 15 seconds) to be restored following fuel starvation, and the application of carburettor heat can take equally as long to clear any induction icing.

The height above the ground at which an engine failure occurs will dictate what actions can be taken, bearing in mind that the first priority always is to fly the aircraft. Practice, however, may mean that you are able to carry out the key checks of **fuel pump ON, change tanks, carburettor heat HOT** (or alternate air) for an engine failure relatively close to the ground. These actions might make all the difference between a successful engine restart and a disastrous forced landing.

In situations where more time is available, establish the aircraft in a trimmed glide **before** planning an approach to a suitable forced landing area, commencing the engine-trouble checks and transmitting a Mayday call. Always remember the old adage: 'Aviate, Navigate, Communicate'. A number of survivable forced landings in the past have ended badly because the pilot became distracted and forgot to fly the aircraft accurately all the way to the forced landing site.

To minimise the risks of a ground fire, the engine-shutdown checks (fuel OFF, mixture ICO, ignition OFF, electrics OFF) **must** be carried out should the trouble checks fail to restore engine power.

If it has been a while since you last practised the drills for engine failure after takeoff, or you simply don't feel confident with them, then consider taking some dual – or, at the very least, run through the drills while sitting in the cockpit on the ground. ■

