

ACCIDENT

Aircraft Type and Registration:	Beech 76 Duchess, G-OADY	
No & Type of Engines:	2 Lycoming O-360-A1G6D piston engines	
Year of Manufacture:	1978	
Date & Time (UTC):	30 April 2008 at 0858 hrs	
Location:	Runway 20, Doncaster Sheffield Airport	
Type of Flight:	Training	
Persons on Board:	Crew - 2	Passengers - None
Injuries	Crew - None	Passengers - N/A
Nature of Damage:	Both propellers damaged and engines shock-loaded, damage to nose landing gear doors, forward bulkhead and nose cone	
Commander's Licence:	Commercial Pilot's Licence	
Commander's Age:	40 years	
Commander's Flying Experience:	3,664 hours (of which 1,521 were on type) Last 90 days -100 hours Last 28 days - 41 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The student pilot was practising touch-and-go circuits under the supervision of an instructor. He touched down on completion of the second circuit, but during the ground roll selected UP on the landing gear selector switch. The nose gear of the aircraft retracted, causing the propeller blades and aircraft nose to contact the ground. The aircraft then slid to a stop on the runway.

History of the flight

The student, an experienced military pilot with 2,230 hours PIC and 31 hours flown in the preceding 90 days, was undergoing tuition to gain a civilian multi-engine

rating. However, he was new to this aircraft and had only three hours on type. The student pilot and instructor departed from Leeds Bradford Airport at 0825 hrs, flew the short distance to Sheffield Doncaster Airport and began flying a routine visual circuit training detail, performing touch-and-go landings. The weather was fine, the runway was dry and visibility was good. The student had been briefed prior to commencement of the training detail to follow the standard company procedure, that the instructor would 'clean up' the aircraft (retract flaps and reset switches as required) during the ground roll then call 'flaps up', allowing the student to commence the takeoff. The student had been briefed to keep his

hands on the control column and throttles during this procedure.

The student pilot completed the first circuit successfully and progressed round the circuit again, touching down and continuing the ground roll. The instructor then called "I'll tidy up the aircraft" at which point the student removed his hand from the throttles and moved the gear selector switch to the UP position. Both the instructor and student recognised this immediately and returned the gear selector switch to the DOWN position. The main gear remained down and locked, however the nose gear retracted. The front of the aircraft dropped, bringing the propeller blade tips into contact with the ground. The aircraft then landed on its nose, damaging the nose gear doors and nose cone. It continued to slide down the runway veering slightly to the left before coming to rest to the left of the runway centreline. The air traffic controller in the tower observed the nose gear retraction and mobilised the airport emergency services using the crash alarm. He then directed a landing helicopter to execute a 'missed approach' and closed the runway, by which time the instructor had also reported the accident on the radio.

Safety protection system

The Beech 76 aircraft has a safety retraction switch which is designed to prevent inadvertent retraction of the landing gear on the ground. The system is triggered by a pressure switch installed in the pitot system, which deactivates the hydraulic pressure pump circuit when the 'impact air' (pitot) pressure is below that generated by an aircraft airspeed of 59 to 63 kt. During the ground roll phase of the touch-and-go in this accident the aircraft remained above this speed range.

Comment

The selection of the landing gear to the UP position by the student pilot was described as a "reflex" reaction. This is a well-documented human factors issue known as an 'inadvertent slip' and occurs when a person subconsciously carries out an action which is inappropriate or erroneous. Typically these actions are well-practised tasks being carried out under routine circumstances and are often a result of high workload. Given the student pilot's lack of familiarity with the aircraft type, it is likely that his mental workload was high during this phase of the flight. The instructor's non-standard callout during the procedure may also have been contributory in acting as a trigger for the student's action.

The briefed procedure for the touch-and-go circuits highlighted the fact that the student pilot should keep his hands on the control column and throttles whilst the instructor prepared the aircraft for takeoff. This was clearly understood by the student and correctly executed during the first circuit. However, by maintaining the aircraft speed above 63 kt during the ground roll, the additional protection provided by the landing gear safety switch was removed. This allowed the student to move the gear selector switch inadvertently. This deficiency has been identified by the Head of Training for the flight training centre involved and the student/instructor briefings have been amended to highlight the importance of a speed check during the ground roll, to confirm a target IAS of below 40 kt prior to the instructor commencing flap retraction.