ACCIDENT

Aircraft Type and Registration:	Cessna A152 Aerobat, G-FLAP
No & type of Engines:	1 Lycoming O-235-L2C piston engine
Year of Manufacture:	1979
Date & Time (UTC):	15 September 2006 at 0915 hrs
Location:	Sandtoft Airfield near Scunthorpe, Lincolnshire
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Nose landing gear collapsed, propeller, engine, left main landing gear damaged, fuselage distorted
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	27 years
Commander's Flying Experience:	1,520 hours (of which 1,430 were on type) Last 90 days - 170 hours Last 28 days - 16 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

The aircraft encountered a downdraft on final approach and landed heavily. The downdraft was probably caused by disturbance of the surface airflow over industrial units upwind of the final approach track.

History of the flight

The instructor was accompanied on his first flight of the day by a student preparing for his first solo flight. The instructor was demonstrating the circuit pattern because the student had not previously operated from the runway in use, Runway 05 Left. The surface wind was from 360º at 10 to 15 kt. The circuit was uneventful until, on final approach, conditions became "slightly bumpy" as the aircraft descended through a height of approximately 80 ft, maintaining a drift angle of between 5º and 8º. At this point the instructor judged that the aircraft was above the ideal approach path, having an aiming point approximately 215 m beyond the touchdown threshold. Therefore, he reduced power to increase the rate of descent whilst maintaining the target airspeed of 65 kt. Simultaneously the aircraft encountered a downdraft and descended rapidly. Before the instructor could take corrective action, the aircraft's nosewheel struck a barbed wire fence in the Runway 05 undershoot. The collision partially arrested the aircraft and caused it to touch down very firmly on the runway in a nose-down attitude.

The impact displaced the nose landing gear rearwards,

allowing the propeller to hit the asphalt runway surface. The main landing gear legs were also displaced causing local deformation of the fuselage structure. The uninjured occupants were able to disembark without assistance and there was no fire.

Discussion

Before the accident the aircraft was in constant use and had been flown frequently by the same instructor without incident. There was no evidence of pre-existing mechanical defects which could have contributed to the accident.

The instructor considered that the downdraft was caused by disturbance of surface airflow over industrial units to the north and north-west of the airfield. He commented that in future he would conduct the first approach of the day with more caution, aiming for a higher approach path and a touchdown further along the runway in order to increase the margin of safety while assessing the wind conditions.

Buildings and steeply undulating terrain upwind of an aerodrome can cause turbulence, updrafts and downdrafts. Guidance on local conditions can normally be obtained from the aerodrome operator. Information about conditions affecting flight safety which occur at an aerodrome when specific wind conditions exist should be published in the UK Aeronautical Information Package (AIP). However, the AIP entry for Sandtoft contains no such information and neither the flying instructor involved in the accident nor pilots with local experience considered the approach to Runway 05 to be notably affected by unusual surface wind conditions.

Where buildings or local topography result in turbulence close to the normal landing threshold, it may be possible, as the instructor suggested, to minimise the effect of such turbulence by touching down further along the runway. Pilots must ensure, however, that sufficient runway remains beyond the likely touchdown point in which to stop the aircraft safely.