

Aircraft type and registration:	Cessna P210 Centurion, G-JSGM (light single engine fixed wing aircraft)	
Year of Manufacture:	1980	
Date and time (GMT):	27 January 1983 at 1225 hrs	
Location:	¾ mile East of Perth Airfield	
Type of flight:	Test	
Persons on board:	Crew - 1	Passengers - 1
Injuries:	Crew - Nil	Passengers - Nil
Nature of damage:	Substantial damage to landing gear, airframe and propeller with severe burning and scorching of the lower right engine nacelle and fuselage.	
Commander's Licence:	ATPL	
Commander's Age:	46 years	
Commander's total flying experience:	7344 hours	

Shortly after take-off there was an undemanded reduction in manifold pressure whereupon the commander turned downwind for an abbreviated circuit. During the downwind leg smoke appeared in the cockpit and fire drills were carried out.

Manifold pressure was still reducing and the smoke became thicker and more acrid; the pressurization dump valve was opened and the aircraft turned on to a tight base leg. During the turn there was a dull explosion from the front right side of the aircraft. The engine was immediately shut down and the battery master switch left on long enough to transmit a 'Mayday' and to lower the landing gear. At 50 ft above ground level the cockpit filled with smoke reducing visibility to nil and a bright orange/red glow appeared forward of the right seat rudder pedals. The aircraft was landed straight ahead with severe damage to the landing gear propeller and front fuselage structure. Both occupants escaped uninjured.

The right lower engine cowling had been almost burned away and there was severe burning apparent on the firewall and the right fuselage skin up to 2 ft aft of the firewall which had charred the insulation and upholstery. Inspection of the engine installation showed fire damage to the wastegate actuating cylinder which had its end plate burned away leading to loss of oil from the cylinder. The cause of damage was the failure of the exhaust manifold clamp bolt Part No 24540-250, located immediately above the wastegate actuator, which had resulted in the undemanded loss of manifold pressure, the burning of the wastegate actuating cylinder and the subsequent fire following the ignition of lost oil.

The exhaust system on the aircraft had not been disturbed since new (645 hrs) other than to replace a turbocharger and had been visually inspected in accordance with AD 81-23-03 (SE82-3) before this flight. Metallurgical examination of the broken bolt showed that the failure resulted from an intergranular crack of relatively slow growth originating on the outside of the lateral bend in the shank of the bolt but that the reason for the origin of the crack could not be determined. There was no material defect in the bolt which was compatible with specification A151431.

The CAA are conducting a renew of the maintenance practices called for in the aircraft service manual and the associated airworthiness directives.