Piper PA-28R-201T, G-DIZY

BULLETIN ADDENDUM	
AAIB File:	**EW/C2004/01/05**
Aircraft type and registration:	Piper PA-28R-201T, G-DIZY
Date & Time (UTC):	5 January 2004 at 1037 hrs
Location:	Buckmore Park, Blue Bell Hill, Rochester
Information source:	Air Accident Report Form submitted by the pilot, and additional AAIB inquiries

The above accident report was published in AAIB Bulletin 5/2004 and included an account of the examination of the engine driven fuel pump, which initially had been suspected of failing and thus causing the subsequent loss of engine power. In the event, no fault was found with the pump and this prompted the aircraft's maintenance organisation to conduct additional investigation on the powerplant.

It was subsequently found that the turbine wheel within the turbo-charger unit was "stiff" when an attempt was made to turn it by hand. The unit was sent to an overhaul agency in the USA which had been approved by the FAA; it was refurbished and returned to the maintenance organisation together with an Inspection Report. This disclosed that no mechanical damage had occurred to the internal components and that the nut on the turbine/compressor shaft was correctly torqued. However, a considerable build up of carbon deposits was noted between the turbine wheel and the seal area of the bearing housing. This had clearly resulted in an interference and consequent restriction of the rotating assembly.

The function of a turbo-charger is to boost the manifold pressure by using the turbine to extract energy from the exhaust gases; thus the seizure of the unit would result in an effective obstruction of both the inlet and exhaust manifolds. This in turn would cause an increased exhaust back-pressure together with a loss of inlet manifold pressure, leading to a loss of engine power.

The turbo-charger was installed in the aircraft, with the engine, in August 2001, since when it has achieved 275 operating hours. The unit was an 'exchange item' and was presumably in an overhauled condition when installed. The presence of the carbon in the bearing after a relatively short period of service is thus difficult to explain. Such build-ups are normally associated with a failure to adhere to the cooling down procedure, in which the engine is idled for several minutes prior to shutting down. If this procedure is not followed, oil within the bearing area is likely to "cook" on the hot surfaces, leading to the formation of carbon deposits. However, the group that owned and operated G-DIZY were reportedly meticulous in following the shut-down procedure.