

<b>Aircraft Type and Registration:</b>	Enstrom 280c, G-BRPO	
<b>No &amp; Type of Engines:</b>	1 Lycoming HIO-360-E1AD piston engine	
<b>Year of Manufacture:</b>	1977	
<b>Date &amp; Time (UTC):</b>	18 July 2004 at 1240 hrs	
<b>Location:</b>	Near Oulton Park Racing Circuit, Cheshire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Substantial damage	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	42 years	
<b>Commander's Flying Experience:</b>	145 hours (of which 137 were on type) Last 90 days - 3 hours Last 28 days - 3 hours	
<b>Information Source:</b>	AAIB Field Investigation	

The helicopter had been undergoing maintenance and waiting for parts for six months. Following its return to service, it had flown a total of approximately 3½ hours over five flights spread over several days. A daily inspection, that included a check of the engine oil level, had been carried out by the pilot at the beginning of each day's flying.

On the day of the accident, the pilot carried out the daily check as usual before undertaking a VFR flight from Hawarden to Knutsford. Near Oulton Park the pilot called Manchester ATC to request en-route clearance. Two minutes later the ATC unit was unable to contact the helicopter and shortly afterwards received a phone call stating that the helicopter had crash-landed at Oulton Park. No distress call had been received.

The pilot reported that the first indication of a problem was light smoke in the cockpit followed shortly afterwards by the feeling of heat at his back. He initiated an emergency descent with power, as at that time there was no indication of an engine malfunction. At approximately 600 feet agl,

downwind from his intended landing area, he believed that the engine stopped. He was now poorly positioned and during the subsequent landing the helicopter rolled over.

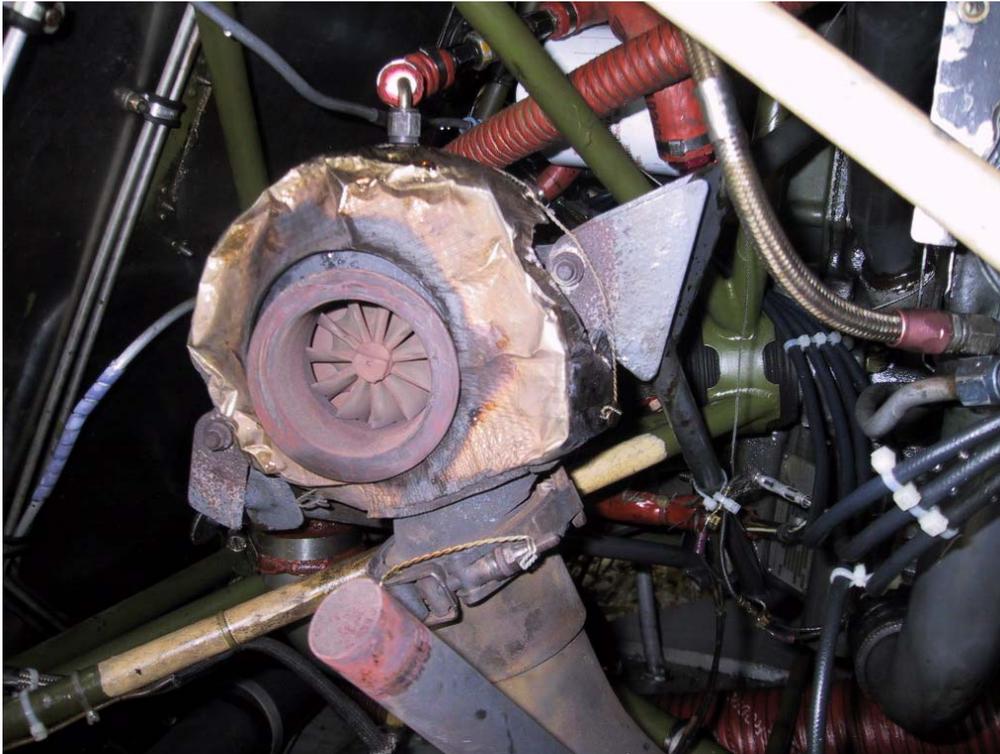
Discussing the event with an AAIB inspector some time later, he stated that he could not be sure that the engine had stopped, that he had noted no indications of engine failure, and candidly suggested that, in his concern about the fire and carrying out an immediate landing, he may simply have mishandled the landing, possibly by flaring late from a high rate descent.

The helicopter remained on its left side for six or seven hours after the accident until it was recovered. The subsequent AAIB inspection showed that there was no evidence of fire except for local overheating of the skin adjacent to the exhaust outlet. The engine turned normally, and all the drive train seemed to have been intact before the landing. The engine contained very little oil, however, when the plugs were removed large quantities of fairly clean oil were found in the cylinders. Overall, there was no indication of an engine malfunction.

The engine was turbo-charged, and the outlet from the turbocharger passes via a short exhaust pipe through an aperture in the skin to dump overboard. This pipe (Figure 1) was detached from the turbocharger, allowing the exhaust to impinge directly on the inside of the skin, resulting in the local overheating previously mentioned. The pilot had assumed that this had been dislodged in the landing, however the clamp securing it (Figure 2) had fractured in fatigue, allowing it to become dislodged in flight. This pipe also connected to a bypass pipe from the engine exhaust system, and once dislodged this allowed exhaust from close to the cylinders to be directed at the bulkhead immediately behind the pilot. The entire engine compartment would have filled with exhaust fumes, accounting for smoke in the cockpit.

The manufacturer's agent advised that fractures of this type of clamp are rare, and that in this particular case the clamp appeared to be quite old. There is, however, no requirement to change it if it appears serviceable.

It seems probable, therefore, that the pilot took the only action available to him given the symptoms of smoke and heat and that the subsequent roll-over was simply the unfortunate consequence.



**Figure 1**

Turbocharger outlet and disconnected bypass pipe  
(To the left is the bulkhead behind the left seat)



**Figure 2**

Fractured clamp and detached exhaust outlet pipe