

## Advanced Technologies AT-10 Airship, G-OATG

<b>AAIB Bulletin No:</b> 12/2003	<b>Ref:</b> EW/G2003/09/08	<b>Category:</b> 3
<b>INCIDENT</b>		
<b>Aircraft Type and Registration:</b>	Advanced Technologies AT-10 Airship, G-OATG	
<b>No &amp; Type of Engines:</b>	2 Diesel Air DA-100 piston engines	
<b>Year of Manufacture:</b>	2001	
<b>Date &amp; Time (UTC):</b>	1 September 2003 at 1130 hrs	
<b>Location:</b>	2 nm east of Cardington, Bedfordshire	
<b>Type of Flight:</b>	Test Flight	
<b>Persons on Board:</b>	Crew - 3	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Right engine silencer damaged	
<b>Commander's Licence:</b>	Commercial Pilot's Licence	
<b>Commander's Age:</b>	48 years	
<b>Commander's Flying Experience:</b>	10,650 hours (of which 107 were on type)	
	Last 90 days - 16 hours	
	Last 28 days - 14 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

### History of Flight

The airship was being flown on a test flight, from Cardington, as part of the certification process, which was to encompass control system dynamics and engine performance after the installation of a new silencer. Once the flying control flutter tests had been carried out, a series of timed acceleration runs were conducted at an altitude of 1,100 feet amsl over open farmland to the east of Cardington. The runs were carried out using each engine in turn, whilst the other engine was kept at idle. After two runs using the right engine, the airship was repositioned for similar tests with the left engine. During this manoeuvre it was discovered that there was a fire in the stubble of the field over which the airship had just passed. Aboard the airship there were no indications of any problems but about 30 minutes later, on landing, it was discovered that the right engine silencer was substantially damaged with evidence of oil contamination around its location.

A farmer later reported that he had seen parts fall from the airship during the test runs, and that these had set the stubble in the field alight.

### Airship Examination

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The silencer fitted to the engine exhaust of the right engine of G-OATG, was made of concentric titanium tubes with stainless steel wadding packed between them, with the aft section of the inner concentric tube being perforated. Inspection of the silencer showed that the aft, perforated section, of the inner concentric tube was missing as was the stainless steel wadding. In addition, a hole had been burnt in the bottom of the silencer with molten titanium on its rear face.

Following this examination it was apparent that the stainless steel wadding had caught fire at some point during the acceleration runs. It was possible that the fire may have started as a result of either unburnt fuel passing through to the exhaust, or the oil leakage into the exhaust that subsequently ignited, due to the high exhaust gas temperatures during the engine runs. This allowed the stainless steel wadding to burn and precipitate the failure of the silencer. As a result of this incident the stainless steel wadding has now been replaced by a ceramic material.

The oil leakage in the right engine was subsequently traced to a leaking piston ring, which was replaced.