

## Robinson R44, G-NUDE

<b>AAIB Bulletin No: 7/2003</b>	<b>Ref: EW/G2003/01/18</b>	<b>Category: 2.3</b>
<b>Aircraft Type and Registration:</b>	Robinson R44, G-NUDE	
<b>No &amp; Type of Engines:</b>	1 Lycoming 0-540-F1B5 piston engine	
<b>Year of Manufacture:</b>	2000	
<b>Date &amp; Time (UTC):</b>	27 January 2003 at 0116 hrs	
<b>Location:</b>	36 nm northwest of Smith Island, Antarctica	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 2	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Aircraft sunk and not recovered	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	42 years	
<b>Commander's Flying Experience:</b>	450 hours (of which 420 were on type)	
	Last 90 days - 18 hours	
	Last 28 days - 16 hours	
<b>Information Source:</b>	Air Accident Report Form submitted by the pilot	

### History of the flight

The two pilots were planning to fly from Cabo de Hornos in Southern Chile across the Drake Passage to Teniente Marsh Airbase on King George Island, Antarctica. After spending several days waiting for a favourable tailwind, they departed at 2105 hrs for the 440 nm crossing. They established the helicopter in the cruise at 700 feet and a 30 kt tailwind gave them a groundspeed of 120 kt. Just over four hours later, approaching King George Island, they observed sea fog ahead of them so they headed to the southwest and attempted to make landfall. Shortly afterwards a vibration was felt, emanating from the engine area, accompanied by a reduction in power output. It became necessary to lower the collective lever to maintain rotor rpm which resulted in a slow rate of descent. After approximately 30 seconds and at 500 feet, the oil pressure fell to zero, the low pressure oil warning light illuminated and a couple of seconds later the engine stopped.

The pilot in the right hand seat flew the helicopter in autorotation whilst the left hand seat occupant climbed out onto the skid and gathered the liferaft and emergency kit. At 20 feet above the sea he jumped into the water. The helicopter was then turned into wind and settled onto the sea surface with zero groundspeed. The rotor blades stopped within a few seconds and the remaining pilot jumped into the sea. The helicopter sank almost immediately. Both pilots boarded the liferaft, activated their emergency beacon and used their satellite telephone to call for help. Six hours later they were spotted

by the crew of a Chilean Airforce Twin Otter who directed a Chilean Navy vessel to the scene to affect a rescue (10 hours after ditching) and convey the pilots to Teniente Marsh Airbase.

### **Survival aspects**

The crew had considered the possibility of ditching and rehearsed the scenario that became a reality. Every 30 minutes throughout the flight they had made a position report on their satellite telephone to the Chilean Coastguard. As the left seat pilot jumped from the helicopter, the liferaft self inflation line became tangled around the skid resulting in the liferaft auto-inflating and then freeing itself from pilot and helicopter. Although the pilot swiftly regained the liferaft, it could easily have blown away reducing their chances of survival in a sea temperature of +2°C. It is believed that a shorter strap would have been more practical and reduced the chances of entanglement.

Both pilots wore survival suits but had their hoods down to facilitate the use of headsets. During the emergency they did not have time to don their hoods and their suits took on water through the unsealed neck whilst they were in the sea. They were also unable to keep the roof of their liferaft in position as waves kept breaking over them. Much of the time waiting to be rescued was thus spent bailing water; exercise they believe, that prevented the onset of hypothermia.

### **Possible causes**

The pilots would not provide details of the amount of fuel carried on board but reported that it was sufficient for the crossing. Their flight plan specified an endurance of 7 hours 30 minutes. An unmodified R44 fitted with an auxiliary fuel tank, carrying its maximum capacity of 185 litres of usable fuel would have given an endurance of just over 3 hours.

Whilst the helicopter was in Punto Arenas prior to this flight, it was fitted with a new crankshaft idler gear bolt. This was required by FAA Airworthiness Directive AD 2002-23-06 as a result of failures of the original bolts that resulted in the immediate loss of drive to the magnetos and subsequent engine failure. The helicopter had flown 16 hours since the bolt change however and had this been the cause of the engine failure, there would have been an immediate total loss of power and not the reduction in power experienced by the crew.

The weather conditions at the time put the engine at high risk from carburettor icing. The handling pilot reported that he was using carburettor heating and that this was keeping the carburettor air temperature out of the avoidance area. The crew did not consider carburettor icing to be causing them a problem at the time of the power loss.

It has not been possible to recover the helicopter from the seabed and as such the cause of this accident cannot be positively determined.