INCIDENT

Aircraft Type and Registration:	AS332 L2 Super Puma, G-REDO
No & Type of Engines:	2 Turbomeca Makila 1A2 turboshaft engines
Year of Manufacture:	2005
Date & Time (UTC):	3 September 2007 at 1530 hrs
Location:	Offshore in the Sumburgh area, Shetland Islands
Type of Flight:	Aerial Work
Persons on Board:	Crew - 4 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Winch cable failure during casualty recovery
Commander's Licence:	Air Transport Pilot's Licence
Commander's Age:	N/A
Commander's Flying Experience:	N/A hours (of which n/k were on type) Last 90 days - N/A Last 28 days - N/A
Information Source:	Accident report form submitted by thewinchman and examination of cable by the AAIB

Synopsis

Whilst attempting to recover a casualty from a fishing boat, the primary winch cable parted, leaving the casualty and the winchman on the vessel's deck. Examination showed that the cable had been subject to mechanical damage in the region of its failure and that the majority of the cable strands had failed as a direct result of this damage. It is possible that the cable became damaged when the swell moved the fishing vessel from under the helicopter causing the cable to lay across its bow.

History of the flight

The crew had been tasked to recover a casualty from a fishing vessel. On arrival over the vessel, the helicopter entered a hover at 50 ft and lowered the winchman to the deck using the primary winch, to conduct an assessment of the casualty; the winch cable was retracted whilst the winchman was onboard the vessel. After completion of the assessment, the casualty was moved to the bow of the vessel for recovery. The primary winch cable was lowered again and the helicopter manoeuvred back over the deck, which allowed the winchman to connect the casualty and himself to the cable. As he gave the signal to be winched up, the swell moved the vessel from under the helicopter, which required the winch operator to pay-out more cable and the helicopter to be repositioned, before attempting the lift. The winch operator stated that during this period, the winch cable was seen to lie across the bow of the fishing vessel but that it did not

appear to snag on any equipment or fittings; no tension was reportedly felt by the helicopter crew on the cable. Immediately the cable became vertical, the winch was operated. The cable failed approximately one metre from the hook as load was applied, leaving the winchman and the casualty on the deck. The cable was reeled in and secured, before a successful recovery of the winchman and casualty was made using the secondary winch.

The helicopter winch operator stated that, although the fishing boat was pitching and rolling, it was considered within the limits for a normal vertical lift.

Investigation

The broken cable was subsequently removed from the helicopter and sent to the AAIB for examination. Microscopic visual inspection showed clear evidence of mechanical damage to a large number of the cable strands close to the failure, which included scoring and cutting, see Figure 1.

The majority of these strands had failed in the region of this damage, with fracture surfaces characteristic of relatively brittle tensile failure. The remaining strands, approximately 15% of the total, exhibited fracture surfaces associated with a degree of plastic deformation (necking) prior to failure in tensile overload. All of the fracture surfaces were free from corrosion and there was no evidence of prior cracking or fatigue.

Conclusions

The nature of the cable failure indicated that the primary cause was due to mechanical damage to the majority of the strands, possibly occasioned when the cable laid across the vessel's bow.

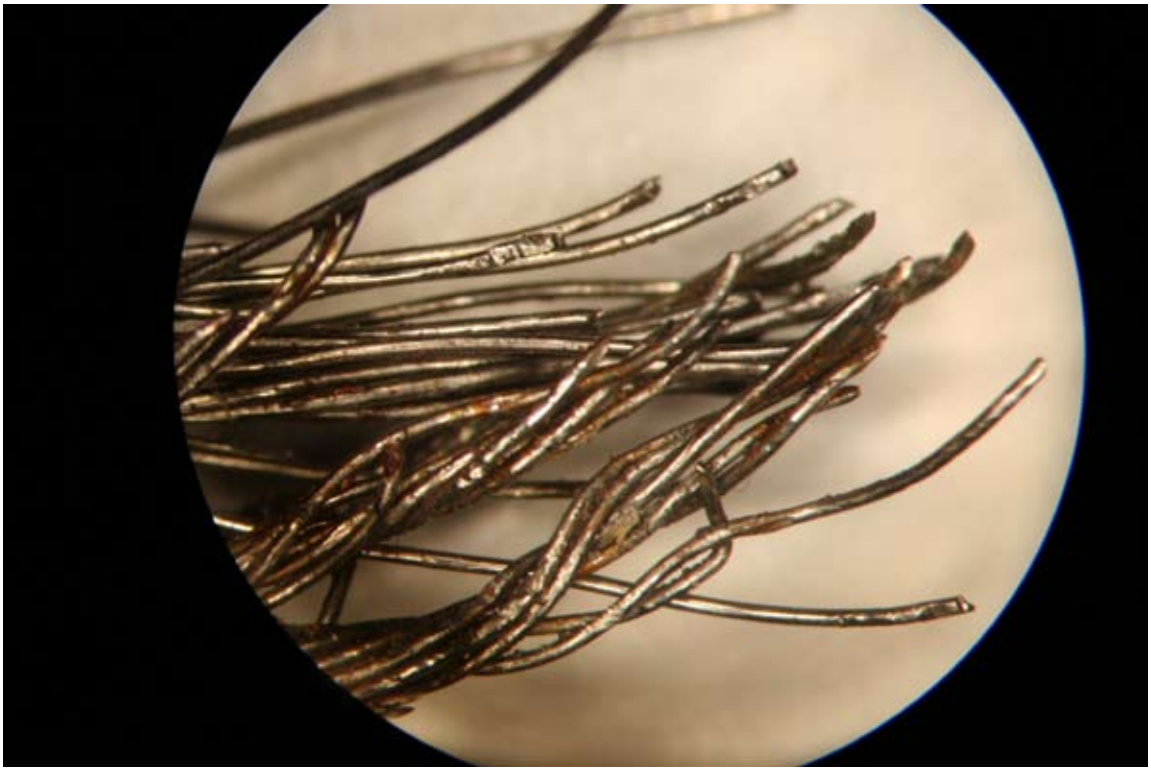

Figure 1

Failed cable strand ends mostly exhibiting evidence of mechanical damage at or close to the failures