ACCIDENT

Aircraft Type and Registration:	AS350B2 Ecureuil, G-ORKY
No & Type of Engines:	1 Turbomeca Arriel 1D1 turboshaft engine
Year of Manufacture:	1988 (Serial no: 2153)
Date & Time (UTC):	8 October 2012 at 1200 hrs
Location:	Cairngorms National Park, Scotland
Type of Flight:	Commercial Air Transport (Cargo)
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to vertical stabliser and tail rotor system
Commander's Licence:	Commercial Pilot's Licence
Commander's Age:	60 years
Commander's Flying Experience:	20,307 hours (of which >10,000 were on type) Last 90 days - 155 hours Last 28 days - 66 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and investigation report by the helicopter operator

Synopsis

The helicopter was nearing the end of a transit flight, with an empty chain lifting sling suspended beneath it, when it encountered localised severe turbulence. The sling struck the tail rotor system but there were no adverse handing issues and the helicopter landed safely. The helicopter operator introduced a number of safety measures as a result of the accident.

History of the flight

The helicopter was nearing the end of a transit flight to a pick-up site, equipped with an empty chain lifting sling suspended beneath it. The pilot reported that the helicopter encountered localised severe turbulence while flying at the maximum allowed airspeed for the configuration, 80 kt. This caused it to sink rapidly, about 60 to 80 ft. The pilot heard a bang and immediately realised that the chain had struck the aircraft, probably in the region of the tail boom. The sling was normally visible in the cargo mirrors, but it had disappeared from view.

There were no uncommanded yawing movements and no vibration. So, with the helicopter responding normally to control inputs, the pilot made a normal approach to land. However, when it was reported by ground crew that the chain was wrapped around the tail boom, the pilot reduced speed, to slower than normal, and carried out an uneventful landing. It was subsequently established that the tail rotor system had sustained considerable damage.

The helicopter operator conducted an internal investigation, which concluded that the sling had entered the tail rotor due to high airspeed. This was probably coupled with a descent and associated nose-up attitude, with turbulence being a contributory factor.

The chain lifting sling was 7 m long and covered in a cloth sheath. The helicopter operator conducted a flight trial which established that this sling angled further back in flight than a sling without a sheath, which was the type of sling originally trialled. The operator subsequently removed the cloth sheaths from the majority of the sling length, which was increased to 10 m. A Safety Bulletin was issued to all affected pilots and ground crew, highlighting the changes and stressing the need to adhere to the 80 kt speed limit, whilst being prepared to reduce speed further in unfavourable flight conditions.

Further occurence

Eight days later a similar event occurred on another of the operator's AS350B2 helicopters, G-BXGA, before the above safety action had been taken. See AAIB report reference EW/G2012/10/17, in this Bulletin.