Sikorsky S76A, G-BITR

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Aircraft Type and Registration:	Sikorsky S76A, G-BITR
No & Type of Engines:	2 Turbomeca Arriel 1S turboshaft engines
Year of Manufacture:	1981
Date & Time (UTC):	22 March 1999 at approximately 1100 hours
Location:	North Sea, Netherlands sector
Type of Flight:	Charter (passenger)
Persons on Board:	Crew - 2 - Passengers - 2
Injuries:	Crew - None - Passengers - None
Nature of Damage:	Tail rotor gearbox fairing detached, together with a section of the pylon side skin
Commander's Licence:	Airline Transport Pilot's Licence (Helicopters)
Commander's Age:	42 years
Commander's Flying Experience:	5,006 hours (of which 987 were on type) Last 90 days -117 hours Last 28 days - 39 hours
Information Source:	AAIB Field Investigation

Introduction

On 2 February the commander of Sikorsky S76A helicopter, G-BIBG, which was based in the Netherlands and was on charter to a North Sea oil and gas company, became aware of a 'crackling sound' on his No 1 VHF radio when on approach to the operator's base at Den Helder, in the Netherlands. At about the same time, the Approach Controller reported that his RT transmissions were poor. In accordance with instructions from the controller, the radio frequency was then changed to that of the Tower Control. The Tower Controller also advised the commander that the helicopter's radio transmissions were poor. The commander then changed from the No 1 VHF to the No 2 VHF radio, and normal transmissions were restored. The remainder of the approach and landing were uneventful, but during subsequent taxiing downwind to the dispersal the co-pilot, who was handling, commented that the yaw pedals seemed to be restricted. However the commander responded that this may have been due to tail wind effects. Later, after shutdown, a member of the

baggage handling ground crew reported that the right-hand tail rotor gearbox fairing was missing. Subsequent inspection found that the aerial lead for the No 1 VHF had been damaged in the area of the tail rotor gearbox. The operator's staff at the base thought that the fairing may have detached as a result of a bird strike.

However, on 10 February the Engineering Department at the operator's main base in the UK issued an inspection alert to its operations world-wide, with copies to other UK operators of the helicopter type, and to the manufacturer. This inspection called for an examination, at the next Daily Inspection, of the attachments of both the left and right-hand fairings of the tail rotor gearbox. Despite these inspections, no other defective fairings were found on the remainder of this operator's S76 fleet at that time.

History of the incident flight

On 22 March another of this operator's Sikorsky S76A helicopters, G-BITR, which was also based in the Netherlands and was on charter to another North Sea oil/gas company, suffered a similar failure. Following an uneventful flight to a platform in the Netherlands sector of the North Sea, the co-pilot had left the cockpit to supervise a 'rotors running' refuelling. Whilst walking past the right side of the helicopter he noticed that the right-hand tail rotor gearbox fairing was missing. He immediately indicated to the commander to shut the helicopter down.

Operator safety action

The operator re-issued the inspection alert on the following day, but with an enhanced inspection technique. This again was copied to other UK operators of the helicopter type, and to the manufacturer. Within 48 hours, six of the operator's S76 helicopters had been found with tail rotor gearbox fairings which had suffered bonding failures between the fairing and the pylon. The operator grounded these helicopters until repairs were effected. One other UK operator found that two of its S76 helicopters had bonding failures in the same region as a result of the inspection alert. All of the associated bonding failures were on the right-hand tail rotor gearbox fairing; thus far no bonding failures have been detected on the left-hand tail rotor gearbox fairing, which is on the same side of the pylon as the tail rotor. The operator has also produced a repair scheme which is being implemented on its helicopters.

Safety recommendation

As a result of these findings and concern that such fairing detachment could potentially lead to contact damage to the adjacent tail rotor blades, the following Safety Recommendation was drafted, on the 21 April 1999, to the helicopter manufacturer and the FAA, the Primary Certificating Authority; it has also been copied to the CAA:

Recommendation No 99-19:

In order to prevent further in flight detachments of the tail rotor gearbox fairings on Sikorsky S76 helicopters, with attendant risk of contact damage to rotating tail rotor blades, the manufacturer and the FAA should urgently promulgate an inspection requirement to all operators of Sikorsky S76 helicopters to inspect the bonding attachment of such fairings for evidence of bonding failure, and to require associated repair of any defective fairings before further flight.

Manufacturer's response

The helicopter manufacturer issued Alert Service Bulletin No 76-55-16 on the 12 May 1999 which introduced a one-time inspection for disbonding of the attachment angles on the tail rotor box forward fairings at the vertical pylon skin, and the implementation of a recurrent 1,500 hour inspection. The Alert Service Bulletin also specified a repair scheme where disbonding was found. It is understood that the FAA was proposing to issue an Airworthiness Directive which would require the inspections specified in the manufacturer's Alert Service Bulletin.