

Air Accidents Investigation Branch

Aircraft Accident Report No: 1/2005

(EW/C2002/07/04)

Operator: Bristow Helicopters Limited

Aircraft Type and Model: Sikorsky S-76A+

Nationality: British

Registration: G-BJVX

Location: Approximately 0.8 nm north west of the
Leman 49/26 Foxtrot platform in the Leman Offshore
Gas Field of the North Sea

Latitude 53° 07' N
Longitude 002°03' E

Date and Time: 16 July 2002 at approximately 1844 hrs UTC

All times in this report are UTC

Synopsis

Lowestoft Coastguard notified the accident to the Air Accidents Investigation Branch (AAIB) at 2000 hrs on 16 July 2002 and the investigation began that same day. The following Inspectors participated in the investigation:

Mr J Barnett	Investigator-in-Charge
Mr N Dann	Operations
Mr K Conradi	Operations
Mr R Parkinson	Engineering
Mr S Moss	Engineering
Mr R Vance	Flight Data Recorders
Mr A Foot	Flight Data Recorders

The aircraft operator's base at Norwich operates S-76 helicopters in support of offshore oil and gas operations in the southern North Sea. On the evening of the accident the aircraft departed Norwich to complete a scheduled flight consisting of six sectors in the southern

North Sea offshore gas fields. The first four sectors were completed without incident but whilst en-route between the Clipper, an offshore production platform, and the Global Santa Fe Monarch, a drilling rig, the aircraft suffered a catastrophic structural failure. The helicopter's main rotor assembly separated almost immediately and the fuselage fell to the surface about 0.8 nm north-west of the Global Santa Fe Monarch which at the time was attached to the Leman 49/26 Foxtrot platform, a normally unmanned installation. Witnesses reported hearing a single or double muffled bang or boom, and seeing the aircraft fall into the sea. The fuselage disintegrated on impact and the majority of the structure sank. Fast rescue craft launched from the Putford Achilles, a multipurpose standby vessel, arrived at the scene of the accident within a few minutes. There were no survivors amongst the nine passengers and two crew.

The investigation identified the following causal factors:

- i) A manufacturing anomaly created an area of reduced insulation between a main rotor blade's spar and one section of its two-piece leading edge erosion cover.
- ii) The affected blade had been struck by lightning.
- iii) Electrical energy from the lightning strike exploited the manufacturing anomaly and caused microstructural damage that was not detectable when the blade was returned to its manufacturer for assessment.
- iv) The blade was repaired before being returned to service and a fatigue crack in the spar originated from the microstructural damage.
- v) An opaque protective patch applied to the erosion cover's scarf joint hid exterior symptoms of the developing spar crack that appeared before the accident.
- vi) The helicopter's proprietary onboard Health and Usage Monitoring System (IHUMS) did not provide sufficient warning of impending blade failure in time to avert the accident.
- vii) There were no in-flight symptoms of impending blade failure that the pilots should have recognised.

Six safety recommendations have been made.