FAA
Aviation Safety

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SUBJ: Star Flex Arm Failures on Eurocopter France Model AS350, AS355, and EC130 Helicopters

SAIB: SW-11-07
Date: December 20, 2010

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts you, owners and operators of Eurocopter France (Eurocopter) Models AS350C, AS350D, AS350D1, AS350B, AS350B1, AS350B2, AS350BA, AS350B3, AS355E, AS355F, AS355F1, AS355F2, AS355N, AS355NP, and EC130 B4 helicopters, of the failure of a small number of star flex arms.

Background

In 2005, an AS350B2 helicopter had one arm of a star flex assembly fail during engine start-up while located on an oil rig in the Gulf of Mexico. An ongoing review of service difficulty data recorded to date indicates a dozen or so star arm failures going back to 1986, spanning 16 million flight hours across the fleet of the AS350, AS355 and EC130 B4 models. There have been roughly 5 star flex part numbers that have evolved over the years. Most of the failures recorded involved the early star flex part numbers, some of which are out of stock or now unavailable. Analysis of the data also shows that most failures occurred during start up, followed by low hover, and in-flight in one case. No serious injuries or fatalities have occurred due to these failures. At this time, this airworthiness concern is not an unsafe condition that warrants airworthiness directive action under Title 14 of the Code of Federal Regulations (14 CFR) part 39.

Recommendations

Although no definitive causes have been determined for these failures, they seem to be related to blades being out of track or cases where some type of resonance phenomena is possible. As such, we recommend the following:

- Make certain the all maintenance actions relating to the anti-resonance features of the subject helicopters, such as portions of the main rotor head, the main gearbox laminate bearings and suspension bars, skid gear spring blades, hydraulic shock absorbers and their ball joints, etc. are rigorously performed to the manufacturers' instructions.
- Review and closely follow all flight manual instructions that pertain to precautions for operating the helicopter, or securing it on the ground, in strong or gusting winds.
- Make sure the skid gear spring blades make proper contact with the ground, wheeled dolly, platform etc., and make sure they are not overhanging the landing or take-off surface.
- Avoid landing on surfaces that are unstable or may yield under the helicopter's weight.
- Reduce shocks to the rotor system by operating the fuel selection control(s) in a smooth manner and by avoiding striking objects firmly with one skid gear only.
- Take care to minimize the amount the rotor disk overhangs landing or take off areas when operating on oil rigs, raised platforms, buildings, etc. Also, be mindful that air my be moving vertically up or down the edge of the raised area and affect the operation of the rotor system.

For Further Information Contact

Jim Grigg, Aviation Safety Engineer, FAA Safety Management Group, ASW-112, 2601 Meacham Blvd., Fort Worth, TX 76193; phone: (817) 222-5126; email: jim.grigg@faa.gov.

For Related Service Information Contact

American Eurocopter Corporation, 2701 Forum Drive, Grand Prairie, Texas 75053-4005, telephone (972) 641-3460, fax (972) 641-3527.