



Department of the Interior Lessons Learned

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Subject: Assisted In-Flight Emergency

Area of Concern: Crew Resource Management

Distribution: All Aviation Activities

Discussion: You never know when your participation might make a difference by assisting the flight crew with a serious in-flight emergency.



A contracted helicopter departed with three BSEE inspectors to conduct inspections of Oil and Gas facilities over 200 miles offshore. Little did they know that in just a few hours, the pilot and one BSEE inspector would be facing a 2 hour trip over the Gulf of Mexico without the ability to control an essential component...its tailrotor!

An uneventful flight was made to the first platform where two BSEE inspectors disembarked. After departing from the first platform the pilot and remaining BSEE passenger landed and refueled at a second platform before taking off again to deliver the inspector to a third platform.

During a stabilized descent to the third platform, the aircraft experienced an uncommanded yaw to the right with the autopilot engaged. The pilot quickly scanned the instruments and determined that all systems were operating normally. The pilot initially thought that the yaw may have been due to wind buffeting. While passing through 2,000 feet MSL, the aircraft experienced a second uncommanded yaw followed by a loss of directional control using the anti-torque pedals. The pilot maintained control using a combination of power and airspeed. Altitude was maintained at 1000 feet MSL with an indicated airspeed of 80 knots. He also informed the BSEE inspector of the situation and continued to assess the nature and degree of the tail rotor malfunction.

The pilot informed the company flight supervisor of the situation and it was determined that the closest airport with a runway and emergency response was over 200 miles away. Based on the winds and distance to the airport, the pilot and flight supervisor determined that it was best to climb to 8000 feet MSL to increase ground speed and reduce fuel burn. Without the earlier fuel stop, their options would have been severely limited.

During the climb, the pilot observed a company helicopter passing in the opposite direction. He contacted the flight supervisor to ask if the aircraft could fly alongside and determine if the tail rotor was actually rotating and if there was any apparent damage. The other aircraft joined up and conducted an aerial observation, noting that the tail rotor was spinning freely and that there was no noticeable damage.

During the two hour flight to the airport, the pilot briefed the BSEE inspector on the nature of the emergency, the emergency procedures, and the type of approach and landing required. The pilot asked the inspector if he would be able to turn the engine power switches off when directed. The inspector replied that he could and the pilot briefed him on those procedures. This enabled the pilot to focus on maintaining control of the aircraft throughout the entire landing sequence.

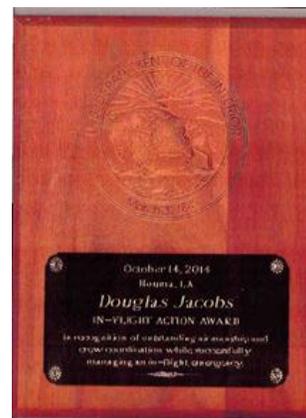
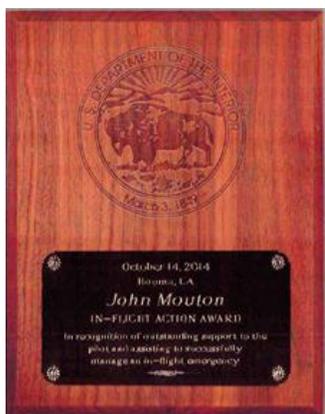
During his initial contact with the Tower, the pilot alerted them of his control problems and declared an emergency. The aircraft touched down on the runway at an airspeed below 40 knots with minimal rate of descent. On rollout, the aircraft began to yaw to the right and leave the runway. The pilot directed the BSEE inspector to secure the engines which allowed the pilot to maintain both hands on the controls.

The aircraft departed the right side of the runway and came to rest on the shoulder. The pilot stopped the main rotor with the rotor brake. The aircraft was secured and a normal egress was made from the aircraft.

Upon inspection of the tail rotor by the contractor's maintenance personnel, it was discovered that the tail rotor pitch change mechanism duplex bearing locking nut loosened and backed completely off of the duplex bearing housing. This resulted in all tail rotor pedal inputs to be completely ineffective. The mechanical cause was due to a failure of both safety wires that are designed to secure the locking nut to the duplex bearing housing.

The successful outcome of this in-flight emergency was due to superior airmanship and the excellent crew coordination throughout the entire emergency with flight operations personnel, another contractor aircraft, and the BSEE inspector. ([SAFECOM 15-0012](#))

KUDOS TO ALL INVOLVED FOR A SAFE OUTCOME TO THIS EMERGENCY !



/s/ Keith Raley

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