(AMD-43A)
(04/10)

Interagency Aviation

ACCIDENT PREVENTION BULLETIN

No. IA APB 12-01 **Date: May 31, 2012**

Subject: Wind Effects on Idling Rotorcraft

Area of Concern: Wind & Idling Helicopter Operations

Distribution: Aviation Operations

Discussion: In September, 2011 a Eurocopter AS-350BA sustained substantial damage after winds caused the aircraft to lift up and roll over on a ridgeline despite the engine operating at idle RPM (NTSB # ANC11LA108). The aircraft had landed on the top edge of a steep slope where winds were forecast to be strong and erratic due to an arriving low pressure system over the area. The National Weather Service (NWS) forecasted the surface winds at 35 – 45 knots however, NWS hourly observations from 3 different observation locations indicated maximum velocities ranging from 10 - 29 knots.

In an effort to better understand how this accident occurred, Eurocopter simulated the event with a similar aircraft of the same weight, rotor speed and other environmental features including surrounding terrain (based on pictures supplied from the accident site), landing surface, and winds. The simulation revealed that the aircraft could be lifted off the ground with a wind speed of as little as 37mph (32Kts) when the impact angle struck from below the rotor disc. As the relative wind angle moves upward toward a level plane with the rotors, the wind velocity required to lift the aircraft increases.

Research of NTSB accident reports discovered a similar incident in December 2008 where a Kaman K-1200 helicopter was upset by wind gusts that fatally injured one ground crew member (NTSB # WPR09LA057). In this particular case, the pilot started the helicopter during light and variable quartering tailwinds of what he estimated to be 15 knots. The NTSB investigation determined the winds at the accident site most likely exceeded the maximum wind allowed with reference to the helicopter's prevailing wind envelope, which resulted in the helicopter lifting to the left and rolling over.

KEY POINTS:

- In both instances, winds were forecast to be erratic and gusty yet local observations were within the published aircraft limits.
- Both aircraft were operating at idle rotor rpm.
- In one situation, ground crew were in close proximity which ultimately resulted in a fatal blade strike.
- There had been no understanding by either crew of a similar event ever happening and they were not alert for this type of control loss.

RECOMMENDATIONS:

- PASPs should be shared amongst all aircrew (including the pilot) in order to ensure pertinent safety related information is communicated. This may require extra coordination when dealing with vendors (contracted personnel).
- Avoid ground personnel movement within the area of the rotor arc when starting, shutting down, or at ground Idle
- Flight Crews are required to;
  - Know wind limitations for start-up and shut down for the make/model operated
  - Plan for flight conditions based on current observations AND forecast weather.
  - When loitering on the ground, base operating RPM on peak wind conditions and plan for additional fuel requirements as necessary.
  - Be aware of the affects of wind blowing from below the rotor disc and plan your landing site selection accordingly.
  - Rising terrain can generate orographic turbulence and greatly accelerate wind velocity as the air travels over the top. This should be accounted for in the preflight planning process.

/s/ Ron Hanks
Ron Hanks
Branch Chief, Aviation Safety
Management Systems, USFS

/s/ Keith Raley
Keith Raley
Chief, Aviation Safety
& Program Evaluations, DOI