



Forest Service Aviation Accident Prevention Bulletin



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Subject: Helicopter Maneuvering Flight and Power Management

Area of Concern: Low Level Helicopter Operations

Distribution: All Helicopter Operations

Discussion: The purpose of this bulletin is to provide a basic guideline of Industry best practices for the performance of flight maneuvers and power management in the low level flight environment.

Some helicopter missions are high risk and policy requires that risks shall be mitigated to As Low As Reasonably Practical (ALARP). To obtain ALARP, continued risk mitigation must be conducted by emphasizing thorough pilot/crew briefings, by developing Crew Resource Management (CRM) and by communicating ALARP during pilot carding. Altitude, airspeed, aircraft performance & limitations should be emphasized during training and operations for all low level helicopter missions.

The helicopter profile used is at the discretion of the pilot and crew based on mission requirements. Nevertheless, it is highly recommended that the pilot and crew reduce their time in a low altitude environment (below 500 feet), “Slow” forward flight (less than 40 knots) and/or “Hovering Out of Ground Effect” (HOGE) profile. Pilots shall consider escape routes and have the ability to avoid additional risk potential in these flight profiles. Pilots should be prompted utilizing CRM to exit/avoid high risk and height & velocity (H/V) concerns when it is not necessary to remain there and be explicitly empowered to decline the flight. It is important to note that aircraft with a “Height/Velocity diagram” located in the performance section, provides information based on an engine failure over a level, hard surface. This chart is not intended to provide information over forested, uneven, soft surfaces.

The HOGE power check that is listed in the Interagency Helicopter Pilot Practical Test Standards (IHPPTS), is intended to be utilized when the aircraft is carrying personnel into or out of, a HOGE site. Contact an Interagency Helicopter Inspector Pilot for questions or concerns. The standards and discussion items listed below should be the minimum items discussed prior to approval/conducting this task.

Practical Test Standard Objectives for Reconnaissance and Surveillance.

1. Thorough knowledge of helicopter flight in the low level environment.
2. Thorough knowledge of the effects of temperature, Pressure Altitude (PA) and Density Altitude (DA) on performance of helicopters in low level environment.
3. Thorough knowledge of helicopter performance planning using the appropriate performance charts and helicopter load calculation form.
4. Thorough knowledge of aerodynamic considerations of low level flight including Hovering In Ground Effect (HIGE) versus HOGE, loss of Effective Translational Lift (ETL), Loss of Tail rotor Effectiveness (LTE), settling with power, height velocity diagram if applicable and loss of lift due to density altitude conditions.

5. Proper reconnaissance techniques in determining winds, obstacles, wire avoidance techniques, forced landing areas, escape routes, and helicopter performance.
6. Demonstrates proper judgement and understands the importance of evaluating risks in relation to the mission being performed.

Refer to the 2015 edition of the Interagency Helicopter Pilot Practical Test Standards at:

http://www.fs.fed.us/fire/aviation/av_library/ihpts.pdf

Planning/Discussion items;

1. Best Rate of Climb Airspeed/Power setting – Pilots should always be aware of their best rate of climb airspeed/power setting. This airspeed/power setting allows the aircraft to turn the best, climb the best and have the maximum excess power available.
2. How is your mountain flying proficiency?
 - Accurately predict wind direction/velocity.
 - Planning for an escape route/drop off.
 - Shallow approaches with the rotor system loaded is the best practice.
 - HOGE power requirement confirmed.
3. Has a daily operational risk assessment been completed?
4. Aircraft emergency procedures briefing conducted and fire shelters available for flight crew and crewmembers.
5. Always anticipate changes in aircraft performance.
6. Always leave yourself a way out.
7. Know where the winds are at all times.
8. Effective Crew Resource Management (Crew Coordination) is critical. Everyone needs to be fully aware of what is going on. Each crewmember has a specific duty and always has the authority to speak up when something is in question.
9. Take the time to learn the typical weather patterns of the area.
10. When the HOGE power requirement is close to max power available, there is a very limited ability to arrest a descent when hovering or flying at speeds below ETL.
11. Know your aircraft limits and power margins before you leave the ground. Performance planning is not conducted to check a block. When computed correctly, it provides the pilot with critical information to enable mission accomplishment and sound cockpit decision making. What are the performance planning requirements mandated by your company manuals/certificates?

The Load Calculation is a mission planning document required by the contract and/or agency policy. It is NOT the complete performance planning that should be accomplished by the pilot.

For any questions or concerns, please contact Tom Cook, U.S. Forest Service National Helicopter Standardization Pilot at 208-861-3059 or thomascook@fs.fed.us

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