

# Mountain Flying Safety Information

The performance charts for general aviation single and light twin aircraft are to be utilized with caution. Performance charts for some older aircraft do not extend to the altitudes and airport elevations found in the Rocky Mountains. The chart figures are derived with a new airframe, new engine and with a test pilot at the controls. It is reasonable that some "buffers" need to be applied to arrive at the real world capabilities of any aircraft which is operated in the high country.

The following information is to provide guidelines for safe flying in the high country during the takeoff, en route, approach and landing phases of flight. These are the guidelines used by flight instructors and pilots with many years of safe mountain flying experience.

## THE DON'TS OF MOUNTAIN FLYING

### LIGHT TWIN AIRCRAFT

- Do not attempt night flight operations, unless on a single engine the aircraft is capable of maintaining at least 16000 feet MSL.
- Do not attempt IFR operations unless a current and qualified two person crew is on board and they have familiarity with the obstruction departure and destination approach and landing procedures.

### SINGLE ENGINE AIRCRAFT

- Do not attempt night operations – **EXTREMELY DANGEROUS**
- Do not attempt IFR operations

### SINGLE OR LIGHT TWIN ENGINE AIRCRAFT

- Do not attempt mountain flying if the 9000 and 12000 foot winds are forecast to exceed 30 knots. Winds aloft may be accompanied by severe turbulence, with down drafts exceeding the climb capability of the aircraft.
- Do not attempt a takeoff unless the loaded aircraft is below 10% the FAA certified gross weight, and the CG is within limits.
- Do not attempt a mountain flight unless the ceilings are at least 2000 feet above the highest terrain and visibility is at least 15 miles

Night and IFR operations are best left to commuter airline, medical evacuation and corporate crews using fully capable and equipped aircraft. All other pilots should operate in day, VFR conditions if safety is to prevail.

## THE DO'S OF MOUNTAIN FLYING

- Do plan the fuel load to arrive at the destination with a minimum one hour fuel reserve. Strong crosswinds or a disabled aircraft on the runway may require a diversion to an alternate airport.
- Do plan a definite altitude to be flown on each segment of the flight. Consult the sectional chart.
- From over a plotted checkpoint, turn the aircraft to the next planned magnetic course and make a mental note of the observed features along that course. Movement from one ridge line to another may be necessary in climbing toward the pass. Some zigging and zagging across the ridge line you are following may be needed to remain in the best updraft along a ridge. Do not lose site of the desired points along the segment being flown.
- Always file a flight plan, keep a flight log and make position reports at every opportunity. Close flight plan after arrival at the destination.
- Do have an operable ELT on board.
- Do have a suitable emergency kit to include a supply of water, signal mirror, whistle and extra clothing as appropriate.
- During the summer, terminate flying activities no later than 1:00 PM MDT.
- Do ask for advise and assistance from FBO, FAA personnel, local mountain qualified flight instructors and pilots. These individuals will be friendly and willing to help.

## ITEMS FOR EXTRA ATTENTION IN MOUNTAIN FLYING FLIGHT PREPARATION

- Get a complete weather briefing, including pilot reports for your proposed route. Make note of the winds aloft, altimeter settings, surface winds and NOTAMS for all en route airports and destinations.
- Consult POH for takeoff, climb and ceiling capabilities of the aircraft being flown. When calculated climb rates are less than 200 feet/NM, do not depart.
- A high density altitude may prevent you from reaching the altitude listed in the POH as the service ceiling.

## **ENGINE START**

- For normally aspirated, fuel injected and turbo charged engines, use normal starting procedure and as soon as the engine starts, lean the mixture until the engine runs smoothly.

## **RUN UP**

- Advance the mixture slightly before beginning the run up. As the run up is completed, advance the throttle to full power and re-lean the mixture as appropriate for the engine being operated. This procedure will provide the proper mixture for takeoff power.

## **TAKEOFF**

- Taxi into position as near the departure end of the runway as practical, hold the brakes and apply full power. Make a power check and release the brakes.
- Climb out with takeoff power and the best rate of climb IAS to at least 1000 feet above the departure airport. Some situations may require takeoff power and best rate of climb IAS to 2500 feet!
- The use of flaps for takeoff may significantly reduce climb performance. Check the POH or make a local inquiry.

## **EN ROUTE**

- Plan to cross all passes and terrain with a minimum 1000 foot clearance. Know these elevations and use the altimeter – DO NOT GUESS.
- Monitor the rate of climb when climbing across terrain; shuttle climb if necessary.
- Cross all passes at a 45 degree angle so a turn toward lower terrain can be accomplished with 90 to 120 degrees of turning. (Escape Maneuver)
- Reach pass crossing altitude (1000 feet above pass terrain) 3 miles before reaching the pass.

## **DESCENT**

- Descents may involve rough air. Be prepared to make a slow speed at maneuvering speed (but no slower than best angle of climb).
- At pattern altitude, briefly bring the engine to full power while adjusting the mixture to insure full takeoff power is available if it becomes necessary.

## **APPROACH AND LANDING**

- Study the destination airport data before departure.
- Due to the proximity of terrain or obstacles, some mountain airports have:
  - ▶ left hand patterns for one runway and right hand for the other
  - ▶ ingenious descent paths in a valley for a straight in approach
  - ▶ preferred landing and departure runways
- When in doubt ask the tower, if one is in operation, UNICOM or another pilot if one is airborne in the vicinity.
- Identify the planned touchdown point on the runway and go for it at the appropriate airspeed and aircraft configuration
- The appropriate IAS is 1.3 times the stall speed in the configuration for the wing. Excessive speed is undesirable.

## **MOUNTAIN FLYING IN WINTER**

- Winds aloft, during winter months, are frequently too strong for safe mountain flying in general aviation aircraft.
- Mountain top winds of 40 to 60 knots are not uncommon during the period from December through March. Occasionally wind speeds greater than 80 knots may occur and continue for several days.
- The prudent pilot will check in advance to learn whether the desired services are available at the mountain destination airport.
- Winter operations can be pleasant and safe when all safe operating requirements are met.

## **RECOMMENDATIONS**

- Attend a mountain flying training course which includes a ground school and mountain training flight. Such training is available through the Colorado Pilots Association, Denver, CO, Sparky Imerson, Denver, CO, American Bonanza Society, Wichita, KS, and others. Individual training is also available through several highly experienced mountain flying instructors in Colorado. Contact the Colorado Division of Aeronautics (303) 261-4418 for further information.
- All adverse weather situations are magnified in the mountains.
- Adhere to the weather requirements mentioned previously, or if not possible, park the airplane at an airport at the edge of the high country and continue the trip by automobile.
- Nothing you want to do tomorrow is worth risking your life and the lives of your passengers today!
- If a bad operating situation is encountered, proceed to an alternate. The best alternate may be the airport of departure.