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If perchance you have a yen to visit mountains in their own lofty neighborhood without the footwear and perspiration required to get there under your own steam, a GA airplane is a wonderful way to travel. I will never forget the thrill of flying over Arizona’s famous Four Peaks mountain in my friends’ Cessna T-206 Stationair a few springs ago. Being a regular on the DCA-PHX run, I had certainly seen it from the loftiest heights of an airliner. But nothing compared to the closer view we got courtesy of general aviation.

There were no particularly difficult conditions on the day we flew in, but believe me, all three of us made a careful analysis of the weather before departing Santa Fe (KSAF) for Mesa (KFFZ). We weren’t crossing the Rockies; still, we recognized that for pilots unaccustomed to operating at higher elevations, the flight environment can be very unforgiving of poor planning.

Knowing the Neighborhood

Let’s start with a quick survey of hazards common to the mountain flying environment. Please note that “quick survey” carries a caveat: If you’re serious about mountain flying, you need a lot more in-depth knowledge and understanding than we can provide in a short article.

Density altitude: As Jim Reynolds explains on p. 19, density altitude is the pressure altitude corrected for temperature. Since increasing temperature makes the air less dense, an airplane will perform as if it is at a higher altitude. The combination of high elevation and high temperature creates high density altitude, which has an adverse impact on aircraft performance.

Winds: Mountains create a wide-ranging menu of wind conditions. Mountain wave turbulence occurs when the wind speed is above about 25 knots and flowing perpendicular to the ridge lines. The air flow can form waves that are much like water flowing over rocks in a stream. The waves forming downwind from the ridge line are composed of strong up and down drafts, and there can also be dangerous rotor action under the crests of the waves. Mountain waves can be visible when enough moisture is present to create those beautiful and (very!) deceptively serene-looking lenticular clouds.

Another hazard is wind flowing through mountain passes. Remember the ground school discussion of carburetors? Just as the flow through a carburetor speeds up in the restriction of the throat, air moving through the narrow restriction of a mountain pass will accelerate and likely create turbulence and up- or down-drafts.

A third element of wind awareness for mountain flying is “orographic lifting,” which is the term for what happens when the wind blows moist air upslope. If the temperatures are lower, the moist air will cool and form visible precipitation in the form of clouds. A cap cloud close to the mountain communicates stable air. However, with summer’s unstable air, orographic lifting can easily launch the formation of thunderstorms.

Still another wind awareness item is the microburst. If you aren’t familiar with mountain flying, you may not be familiar with the dry microburst, which occurs with little or no warning in the clear air beneath virga. Dry microbursts are common in and near the Rockies and other mountainous areas of the western United States during the summer. Dry microbursts are most likely to form around thunderstorms with bases above about 3,000 to 5,000 feet AGL and a temperature/dew point spread greater than 40 degrees. They can be indicated by blowing dust underneath a high-base thunderstorm ... but of course you should stay well clear of thunderstorms in all circumstances.

Visibility: Temperature inversions often create fog in mountain valleys during the night. Valley fog can be very thick and, since it may require several hours to dissipate, it’s definitely an item to factor into mountain area arrival and departure planning.

Acquiring the Zen

Presented in terms of the PAVE (pilot, aircraft, environment, external pressures) risk mitigation checklist, here are a few tips to start acquiring the distortion-free zen you need for safe mountain flying.

Pilot: Mountain flying will challenge your abilities to fly the airplane proficiently, navigate, and deal with weather. Take a clear-eyed look at your experience and background. Unless you learned to fly in such an area or have extensive mountain flying experience, safety demands that you consider taking a recognized mountain flying course to give
you the knowledge and skills you will need in this environment. The Internet provides information on the many courses available.

Aircraft: The mountain flying environment will also challenge your aircraft and, in circumstances like high density altitude combined with high elevation, conditions may demand greater performance than a GA aircraft can offer. Some experts recommend that 160 horsepower should be considered the absolute minimum for the airplane, especially when the pilot lacks significant mountain flying experience.

enVironment: Here's where the homework is critical. In addition to knowing what the pilot/aircraft team is capable of doing, you need to acquire a thorough understanding of not only the weather hazards described above, but also practical mitigation strategies. A few basic tips:

Altitudes: Plan to cross mountain passes at an altitude at least 1,000 feet above the pass elevation. This altitude could result in flying at or above 10,000 MSL; which means that you need to be sure you can meet VFR cloud clearance requirements if you are not on an IFR flight plan. Since the dearth of mountain weather reporting stations might complicate the task of gathering accurate information, be sure you have a viable escape route at all times. It's a good idea to call some of the airports along your route, and pilot reports can be as valuable as gold. Also, plan to cross ridges at a 45-degree angle. This technique allows you to turn away from the ridge more quickly if you encounter a severe downdraft or turbulence. After crossing a ridge, turn directly away from it at a 90-degree angle to depart the most likely area of turbulence.

Visibility: Many experienced mountain pilots recommend having at least 15 miles of visibility before attempting mountain flights. Since your navigating will be primarily by pilotage and dead reckoning, good visibility will help keep you oriented in a sometimes confusing array of geographical cues. By the way, experienced mountain pilots generally caution against IFR and night flying in the mountains for novices. Instrument approaches and departure procedures often require a higher level of pilot skill and aircraft performance, and night obscures important visual navigation cues needed for terrain clearance.

Winds: Don't attempt to operate in mountainous terrain if the winds aloft forecast at mountain top levels is higher than 25 knots. During preflight, experts recommend that you pay close attention to forecasts at and above the mountain ridges. When flying in the west, that means checking the 9,000 and 12,000 foot forecasts. Also, the position of high and low pressure areas can offer clues to wind speed potential.

Routes: Flying in the mountains demands a lot more care than just drawing a straight line or following the magenta line on your GPS moving map navigator. The safer path in mountain areas is to follow features such as highways, river drainages, and valleys. In addition to being at a lower elevation, these routes offer better emergency landing options. Also, consider using pilot groups or Internet forums to find local pilots who have knowledge and experience to offer. And this point bears repeating: Always have a fly-able alternative!

Survival: The mountain flying environment can be very harsh, and survival equipment is a must. Do the research needed to assemble a good survival kit. At a minimum, you should have a three-day supply of food and water for each occupant, winter clothing, a medical kit, and signaling devices.

External factors: This one is easy to say, but very hard to do. As John Allen notes in his article on p. 1, elements of the pilot personality can sometimes cause us to attempt things we know we should not do. Take the time to ferret out the factors that might be pushing you into a poor position, whether in the go/no-go decision or deciding whether diversion is necessary once you are underway.

Done properly, mountain flying can significantly add to your repertoire of aviation skills and memorable adventures. Acquire the zen, and enjoy the view. 🦚

Susan Pearson is a Special Assistant in the FAA’s Flight Standards Service and editor of FAA Safety Briefing. She is an active general aviation pilot and flight instructor.
High Visibility Safety Apparel

CAPR 62-1 Policy: All Safety Vests or Safety Apparel worn by CAP members must meet the American National Standards Institute, Inc. (ANSI) Class 2 or Class 3 requirements. To ensure compliance with federal law, CAP members must comply with this anytime duties exposed them to public vehicular traffic such as directing traffic, investigating crashes, handling lane closures, obstructed roadways and disasters within the vehicle traffic lanes.

The above photos were taken at three different distances to provide that picture that is worth a 1000 words. ANSI Class 2 (or 3) safety vests or apparel is a requirement for the above reason. CAP’s missions can vary and can be unpredictable, but you can be prepared. Compliance is safety of life.

Examples of what approved safety apparel (Class 2 or 3) can give CAP members:

- Greater visibility during inclement weather and at night
- 360-degree visibility; meaning wearer can be seen from all sides
- Class III: Identifiable conspicuous body motions at a minimum of ¼ mile as a person

Safety Awareness Bulletin: 13-01 (121210)
Civil Air Patrol has cultivated a close relationship with the National Transportation Safety Board in recent years. This partnering, along with a strengthening relationship between CAP, the FAA, and military services has served CAP well. Those organizations have also benefitted from their sharing with CAP. Since 2010, the Army National Guard has extended an annual invitation for CAP members to attend the NTSB’s Aircraft Investigation Course, and paid the cost of tuition.

As 2013 is now upon us, CAP is again opening the application process for members to be considered for attendance at the next course offering August 5-16, 2013.

If you are interested in attending this two-week course, earning safety investigation certification from the world’s premier aviation accident investigation board, and applying your new mishap investigation skills for Civil Air Patrol in a variety of high-profile mishap reviews, then please apply as follows:

- Submit a completed CAPF17 with the following information:
  - Title of Activity: NTSB Aircraft Accident Investigation Course
  - Location of Activity: NTSB Academy, Ashburn, VA
  - Dates of Activity: August 5-16, 2013
- Attach both a CAP resume and a professional resume that show an ongoing commitment to CAP, along with aviation and leadership qualities that demonstrate your likelihood of success
- Submit applications to your wing commander for endorsement and forwarding.
- Finalists are contacted by the National Safety Team which makes the final selection based on follow-on questionnaires and interview results.

Civil Air Patrol takes safety professionalism very seriously. Selectees will represent CAP at the NTSB Academy alongside classmates of various branches of the U.S. Armed Services.

Tuition is fully-paid by the Army National Guard. Food, transportation, and housing (hotel) is the personal responsibility of each student.

The application process opens 1 Jan 13 and all applications must be received with proper command endorsements by 31 Mar 13. Late applications will not be accepted.

For more information, contact your Wing or Region Director of Safety.
Returning Home after a Disaster: Be Healthy and Safe

Stay safe from hazards a storm may leave in your home.

Be Careful of Getting Sick or Hurt

- Clean your home as recommended to stop mold. Never mix bleach and ammonia, because the fumes could kill you.
- Prevent carbon monoxide poisoning by placing generators, pressure washers, charcoal grills, camp stoves, or other fuel-burning devices outside and away from open doors, windows, and air vents.
- Eat and drink only food and water you know are safe.
- Drive safely, wear your seatbelt, and don’t drink and drive.
- Do not enter a building if you smell gas. Call 911. Do not light a match or turn on lights.
- Wear waterproof boots and gloves to avoid floodwater touching your skin.
- Wash your hands often with soap and clean water, or use a hand-cleaning gel with alcohol in it.

Clean Your Home and Stop Mold

- Take out items that have soaked up water and that cannot be cleaned and dried.
- Fix water leaks. Use fans and dehumidifiers and open doors and windows to remove moisture.
- To remove mold, mix 1 cup of bleach in 1 gallon of water, wash the item with the bleach mixture, scrub rough surfaces with a stiff brush, rinse the item with clean water, then dry it or leave it to dry.
- Check and clean heating, ventilating, and air-conditioning systems before use.
- To clean hard surfaces that do not soak up water and that may have been in contact with floodwater, first wash with soap and clean water. Next disinfect with a mixture of 1 cup of bleach in 5 gallons of water. Then allow to air dry.
- Wear rubber boots, rubber gloves, and goggles when cleaning with bleach. Open windows and doors to get fresh air. Never mix bleach and ammonia. The fumes from the mixture could kill you.
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- Wear rubber boots, rubber gloves, and goggles when cleaning with bleach. Open windows and doors to get fresh air. Never mix bleach and ammonia. The fumes from the mixture could kill you.
Protect Yourself from Carbon Monoxide Poisoning

Do not use generators, pressure washers, charcoal grills, camp stoves, or other fuel-burning devices indoors or in enclosed or partially enclosed areas such as garages, even with doors or windows open. Do not put these devices outside near an open door, window, or air vent. You could be poisoned or killed by carbon monoxide, an odorless, colorless gas from burning fuel such as gasoline, charcoal, or propane. Make sure a battery or electric powered CO detector is functional to alert you to dangerous levels of carbon monoxide in your home.

Keep Drinking Water and Food Safe

- Listen to public announcements to find out if local tap water is safe for drinking, cooking, cleaning, or bathing. Until the water is safe, use bottled water or boil or disinfect water.
- If a "boil water" advisory is in effect, do not drink tap water or use it to brush your teeth unless water has come to a rolling boil for at least 1 minute or is treated with unscented household chlorine bleach. To treat water, add 1/4 teaspoon (approximately 1.5 mL) bleach to 1 gallon of cloudy water or 1/8 teaspoon (approximately 0.75 mL) bleach to 1 gallon of clear water. Stir well and let it stand for 30 minutes before you use it.
- Do not eat food that smells bad, looks bad, or has touched floodwater. When in doubt, throw food out.

Prevent Electrical Injuries

- Do not touch fallen electrical wires. They may be live and could hurt or kill you.
- Turn off the electrical power at the main source if there is standing water. Do not turn on power or use an electric tool or appliance while standing in water.

Avoid Contact with Animals and Insects

- Reduce mosquito bites. Consider avoiding outdoor activities during the evening and early morning, which are peak biting times for many mosquitoes. Use an insect repellent with DEET or Picaridin.
- Stay away from wild or stray animals. Stray dogs may be hurt or afraid and may bite. Call local authorities to handle animals.
- Get rid of dead animals according to local guidelines.

Drive Safely

- Stop and look both ways at all intersections. Drive slowly and keep space between you and other vehicles. Watch out for trash on the road.
- Wear your seatbelt.
- Do not drive if you have been drinking.
Winter Storm Safety Checklist

Winter storms can range from a moderate snow over a few hours to a blizzard with blinding, wind-driven snow that lasts for several days. Some winter storms are large enough to affect several states, while others affect only a single community. Many winter storms are accompanied by dangerously low temperatures and sometimes by strong winds, icing, sleet and freezing rain.

What should I do?

- Dress in several layers of lightweight clothing, wear mittens and a hat (preferably one that covers your ears).
- Wear waterproof, insulated boots to keep your feet warm and dry and to maintain your footing in ice and snow.
- Minimize travel. If travel is necessary, keep a disaster supplies kit in your vehicle.
- Listen to a NOAA Weather Radio or other local news channels for critical information from the National Weather Service (NWS).
- Winterize your vehicle and keep the gas tank full. A full tank will keep the fuel line from freezing.
- Insulate your home by installing storm windows or covering windows with plastic from the inside to keep cold air out.
- Maintain heating equipment and chimneys by having them cleaned and inspected every year.
- Bring pets/companion animals inside during winter weather. Move other animals or livestock to sheltered areas with non-frozen drinking water.
- Running water, even at a trickle, helps prevent pipes from freezing.
- All fuel-burning equipment should be vented to the outside and kept clear.

Cold-Related Emergencies

- Frostbite and hypothermia are two dangerous and potentially life-threatening emergencies. Learn how to care for these emergencies by taking a first aid class.

What supplies do I need?

- Water—at least a 3-day supply; one gallon per person per day
- Food—at least a 3-day supply of non-perishable, easy-to-prepare food
- flashlight
- Battery-powered or hand-crank radio (NOAA Weather Radio, if possible)
- Extra batteries
- First aid kit
- Medications (7-day supply) and medical items (hearing aids with extra batteries, glasses, contact lenses, syringes, epi) multi-purpose tool
- Sanitation and personal hygiene items
- Copies of personal documents (medication list and pertinent medical information, proof of address, deed/lease to home, passports, birth certificates, insurance policies)
- Cell phone with chargers
- Family and emergency contact information
- Extra cash
- Baby supplies (bottles, formula, baby food, diapers)
- Pet supplies (collar, leash, ID, food, carrier, bowl)
- Tools/supplies for securing your home
- Sand, rock salt or non-clumping kitty litter to make walkways and steps less slippery
- Warm coats, gloves or mittens, hats, boots and extra blankets and warm clothing for all household members
- Ampule alternate heating methods such as fireplaces or wood- or coal-burning stoves

What do I do after a storm?

- Go to a designated public shelter if your home loses power or heat during periods of extreme cold.
- Avoid driving when conditions include sleet, freezing rain or drizzle, snow or dense fog.
- Before tackling strenuous tasks in cold temperatures, consider your physical condition, the weather factors and the nature of the task.
- Protect yourself from frostbite and hypothermia by wearing warm, loose-fitting, lightweight clothing in several layers. Stay indoors, if possible.
- Help people who require special assistance such as elderly people living alone, people with disabilities and children.
- Check on your animals and make sure that their access to food and water is not blocked by snow drifts, ice or other obstacles. If possible, bring them indoors.

Caution: Carbon Monoxide Kills

- Never use a generator, grill, camp stove or other gasoline, propane, natural gas or charcoal-burning devices inside a home, garage, basement, crawl space or any partially enclosed area. Locate unit away from doors, windows and vents that could allow carbon monoxide to come indoors.
- The primary hazards to avoid when using alternate sources for electricity, heating or cooking are carbon monoxide poisoning, electric shock and fire.
- Install carbon monoxide alarms in central locations on every level of your home and outside sleeping areas to provide early warning of accumulating carbon monoxide.
- If the carbon monoxide alarm sounds, move quickly to a fresh air location outdoors or by an open window or door.
- Call for help from the fresh air location and remain there until emergency personnel arrive to assist you.

Let Your Family Know You’re Safe

If your community experiences a severe winter storm, or any disaster, register on the American Red Cross Safe and Well Web site available through RedCross.org to let your family and friends know about your welfare. If you don’t have Internet access, call 1-866-GET-INFO to register yourself and your family.

For more information on disaster and emergency preparedness, visit RedCross.org.
Correction: Paper Pilot Certificates
Notice Number: NOTC4466

Oops! We made a mistake in a recent Notice. Here is the revised Notice.
If you have already replaced your paper pilot certificate, then this message is not for you. On the other hand, if your pilot certificate is still printed on paper, please read carefully.
The FAA is under a mandate to replace all paper certificates with plastic certificates. In fact, paper pilot certificates have already expired!

If you are a mechanic, on the other hand, and do not replace your paper certificate on or before March 31, 2013, you will no longer be able to exercise your privileges!

All certificated Airmen, including mechanics, repairmen, pilots, etc., are required to replace their paper copy with a plastic copy, or they will no longer be able to exercise the privileges of that certificate.

The best way to get a new replacement certificate is to follow the instructions at http://www.faa.gov/licenses_certificates/airmen_certification/certificate_replacement/.
The replacement cost is $2.00, unless you still have your Social Security Number on your certificate and you ask to have it removed.

Avoid the Rush! Apply today!

This notice is being sent to you because you selected "General Information" in your preferences on FAASafety.gov. If you wish to adjust your selections, log into https://www.faasafety.gov/Users/pub/preferences.aspx where you can update your preferences.
Got a great safety article that you would like to see in a future Beacon newsletter?
Please send it to Lt Col Sharon Williams at safetybeacon@capnhq.gov.

Discover report, stop, share, listen, and learn. The things we have read about in this issue already happened, so you are not allowed to experience these for yourself.

Remember to “knock It Off” and slow down. For streaming dialogues on some subjects, remember CAP Safety is on Facebook and Twitter.

The dates of the Safety Officer College (CAPSOC) are June 10-14, 2013 with travel days on the June 9th and 15th at Kirtland AFB, New Mexico. Applications will be received and students will be selected by each Wing Commander, and for staff officers assigned to the region HQ, Region Commander. Application closure is March 31st, 2013. Contact your commander for more information.

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