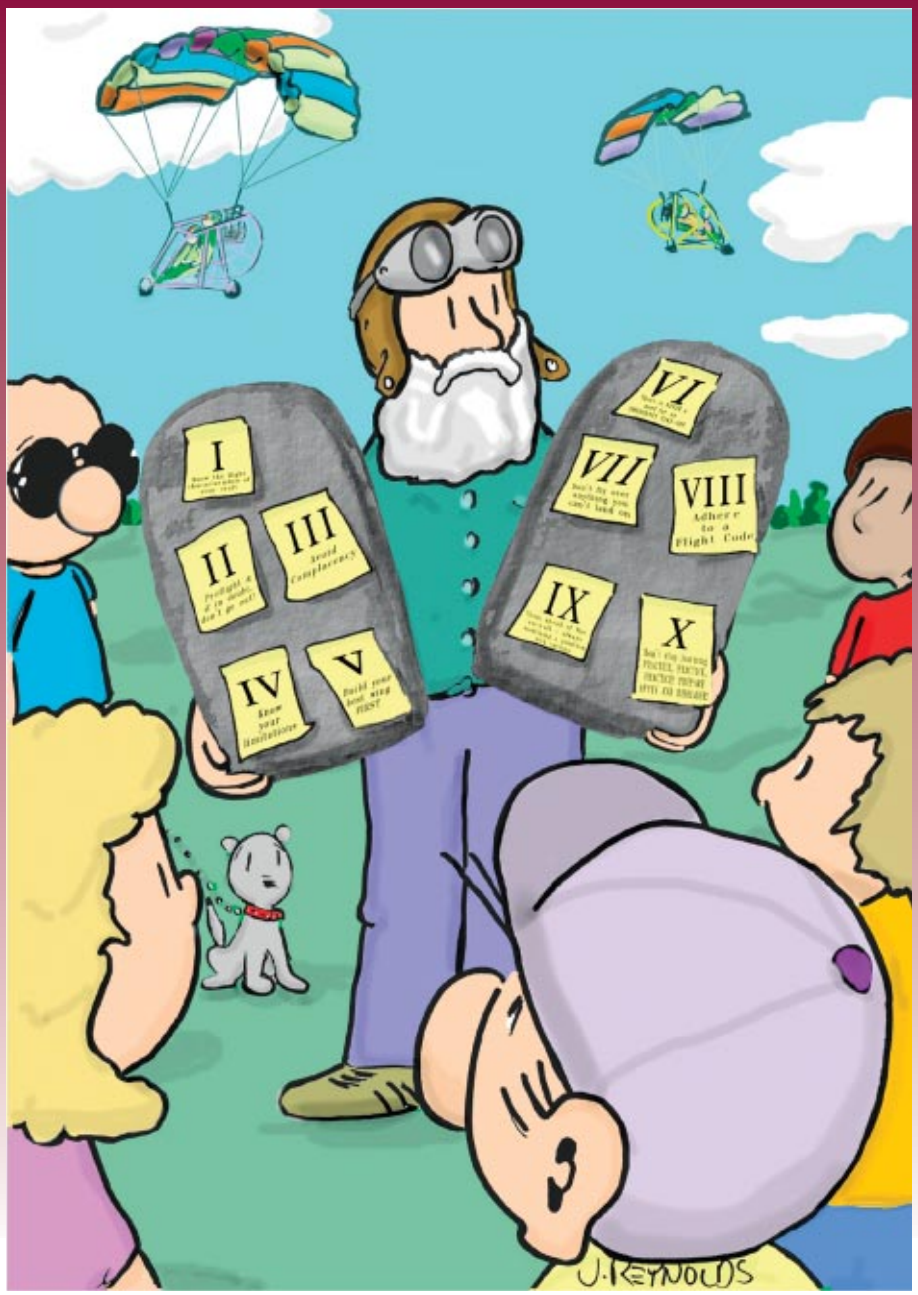

The 10 Commandments of Safely Flying a Powered Parachute

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In the beginning after it was formed, the Earth cooled, dinosaurs came, ruled, and died. Then mankind took control of Earth and, via religious inspirations, devised a set of rules by which a society should live to grow and prosper. Over time, technology increased, providing mankind with the ability to go to the moon.

Somewhere between that first life form on Earth and men landing on the moon, the powered parachute was created. By abiding by and enforcing society's rules, mankind has experienced incredible growth and prosperity. It follows, then, that to accomplish the same growth and prosperity, the powered parachute world should also abide by a set of rules. I hereby propose the following 10 commandments for safe powered parachute (PPC) flying.

I
Know the flight characteristics of your aircraft.

II
Preflight, and if in doubt, don't go out!

III
Avoid complacency.

IV
Build your wing before heading to the sky.

V
Know your limitations.

VI
There is never a need for an emergency takeoff!

VII
Don't fly over anything that you can't land on.

VIII
Adhere to a flight code.

IX
Think ahead of the aircraft.

X
Don't stop learning!

1. Know the flight characteristics of your aircraft.

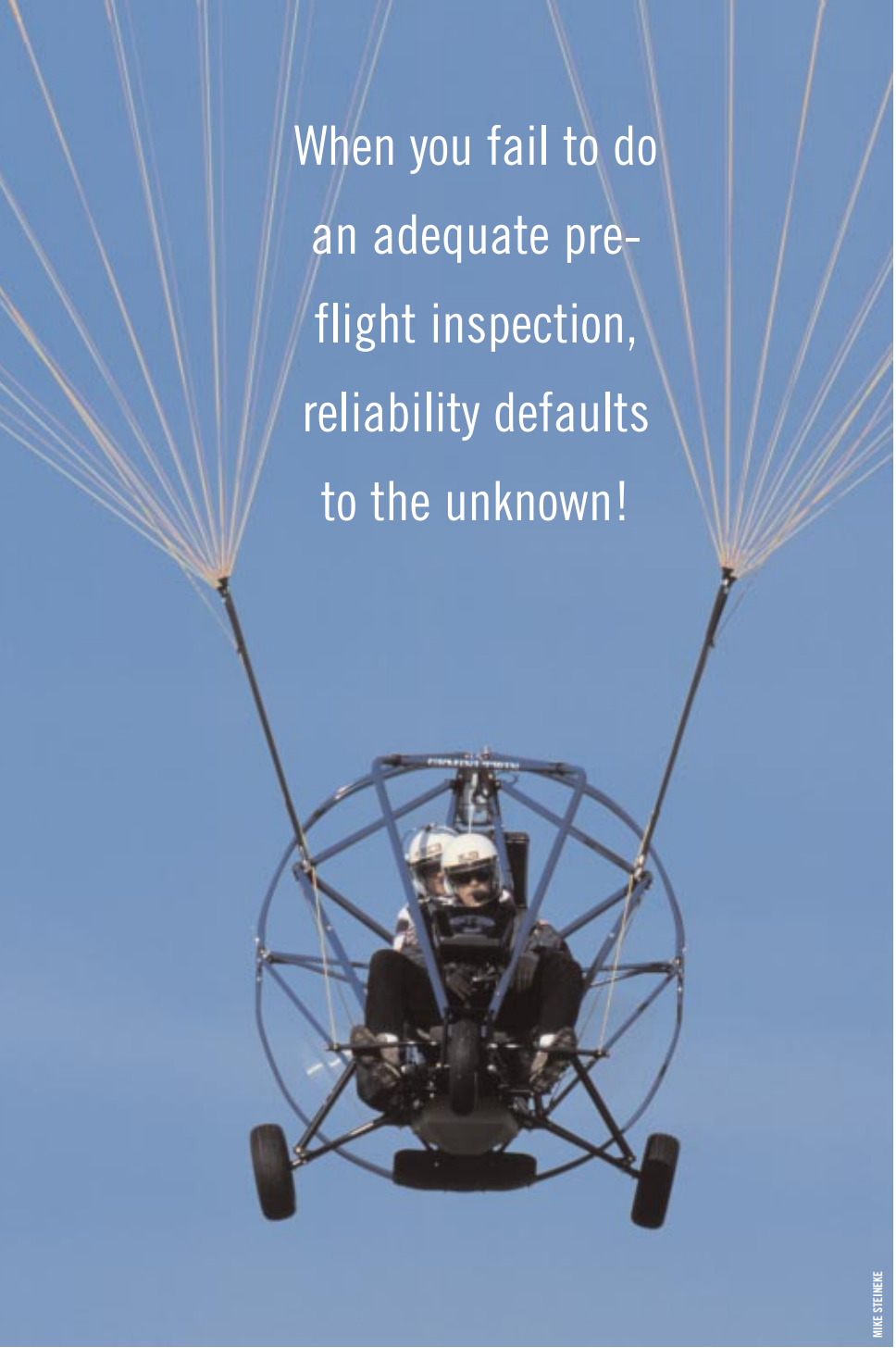
Put more simply, know why your aircraft flies the way it flies. Know how your PPC flies without your input, how it flies in calm air, how it handles different types of turbulence, and how to stabilize your flight path through turbulence. Know how each control movement affects your aircraft.

Here are the fundamentals of powered parachute flight:

- While airborne, changes in propeller rpm directly affect changes in angle of attack (AOA).
- Increasing the throttle drives the cart forward; changing the AOA causes the PPC to climb.
- Decreasing the throttle allows the cart to settle under the wing; changing the AOA allows it to descend.
- Because of the pendulum effect of the cart under the wing, there is a delay between throttle (rpm) changes and AOA changes, usually a second or two. This delay is more noticeable when increasing the rpm to move the weighted cart upward against gravity and forward of the wing.
- More throttle does not equate to more airspeed. An initial increase in throttle may swing the cart forward under the wing and through the pendulum curve, but it does not significantly increase the speed of the relative wind over the wing. The weight of the cart is primarily responsible for the airspeed of the PPC. That is why you do not notice airspeed changes when the engine is shut down in flight.
- The lighter your cart is (total weight under the wing), the slower your airspeed and descent rate, but your maneuvers will be agile.
- The heavier your cart is, the faster your airspeed and descent rate will be. Your flight will be more stable, but more effort will be required to make maneuvers.
- There are three ways to turn a PPC. 1) By creating drag on the trailing edge of the wing by depressing a foot pedal or steering bar with your leg muscles. This is the normal way of steering. 2) By shifting your weight. A PPC will not "turn on a dime" this way, but it will turn. 3) By the torque of the engine. The engine's rpm creates propeller torque, which will tend to turn the nose of the PPC in the opposite direction of the propeller's rotation. (If your pusher prop turns clockwise, then increasing the rpm will turn your PPC to the left.)
- Contrary to popular assumptions, the engine of the powered parachute is not responsible for the aircraft's airspeed. The airspeed of a PPC is determined by two factors: 1) the gross weight of the cart and occupants, and 2) the drag (primarily parasitic drag) of the wing.)

2. Preflight.

It is crucial to make a conscientious preflight before every flight. This preflight does not start with the plane. It must start with the pilot. Here is an example of a preflight checklist. Note that the preflight does not end until the wing is "built" during your "rolling" preflight.



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The Pilot

- Are you focused?
- Attitude/health check—how are you feeling mentally and physically?
- Drugs—are you taking any prescription or over-the-counter drugs that may affect your ability to fly? Have you followed the "eight hours bottle-to-throttle" rule?
- Clothing—are you wearing any loose clothing that could get caught on the cart?
- Accessories—are your gloves, hats, pens, and sunglasses secure? We don't want anything going through the prop.
- NOTAMs (notice to airmen): Did you call WX-BRIEF (800/992-7433) to check NOTAMS, including temporary flight restrictions (TFRs) before leaving for the field? TFRs affect all pilots and flying activities. Remember, powerplants, reservoirs, and special events are hot zones that should be avoided.

Weather and Field Conditions

- What are the current conditions and forecast conditions for the duration of your flight? Are the winds within your limits? Will they stay there?
- Are there rocks, gullies, or debris that might compromise a normal or an aborted takeoff? If you have not recently used this field, put on those walkin' shoes. You want to be sure there are no holes in the field or debris lying under the cover of the grass or vegetation.
- Have you considered any wind rotor activity—trees or buildings that may create mechanical turbulence?

The Plane

- Verify the aircraft's state of airborne readiness. Check all nuts, bolts, joints, rivets, and welds. Make at least one hands-on, "touchy feely" pass over your craft.
- Check all electrical equipment—switches, lights, instruments, and magnetos.
- Is the propeller clean and free of chips? Is the leading edge tape secure?
- Check all fluids—fuel, oil, and water.
- Are the tires in good condition?
- Is the chute clean and clear of debris? Are all lines clear of debris and untangled? Are all attachment points secure?

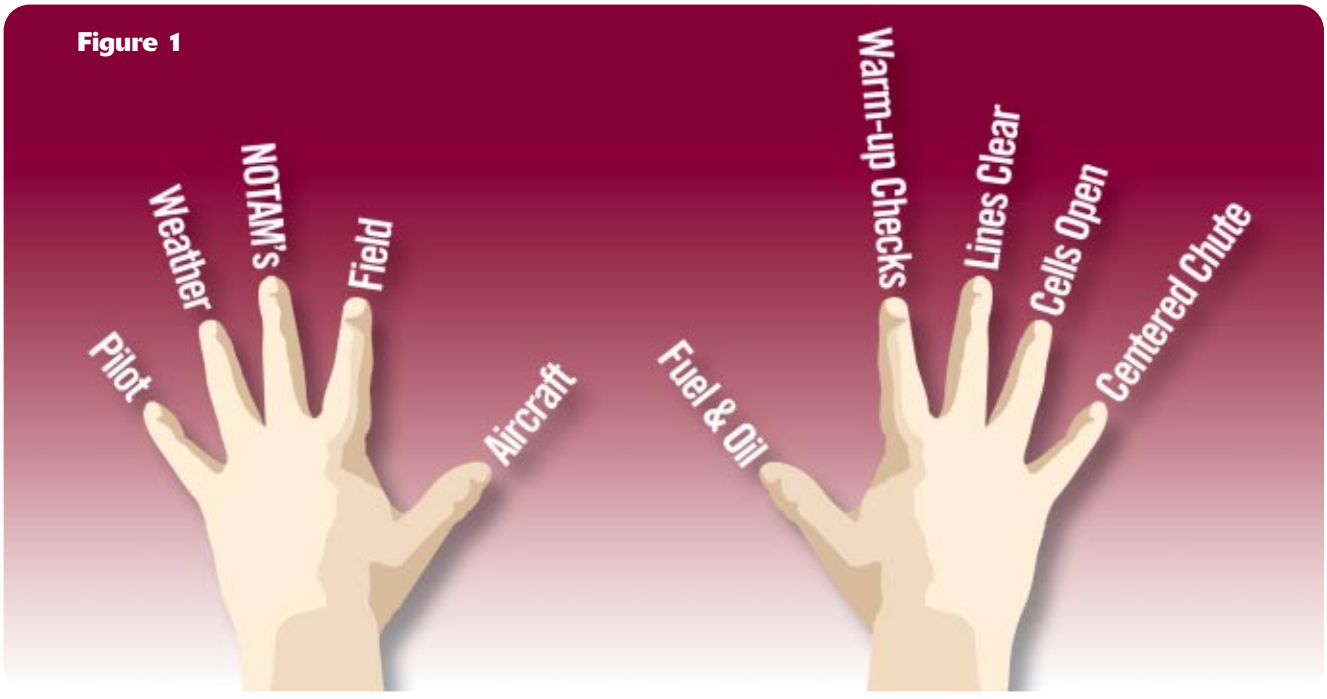
Radio and Instruments

- Verify that the channel is clear.
- Check that communication between pilot and passenger is clear.

Now, you're ready to strap in and get comfortable. But, can you still reach all of the controls?

Could you find all the controls with your eyes closed?

When you fail to do an adequate preflight inspection, reliability defaults to the unknown! A good preflight does not have to take a long time; it has to be conscientious, and it should always involve a checklist. If you're too lazy to create your own checklist sheet, see Figure 1 for a simple 10-finger list. Note: The last three items on the right



hand are done during the rolling preflight. (Note: The term "rolling preflight" refers to the last checks made on the status of the chute as one rolls out for takeoff.)

3. Avoid complacency.

Once you've completed a thorough preflight and are airborne, don't let your guard down. Never underestimate changes in the weather. Be able to work with the wind or leave flying for another day! Never overestimate the amount of gas you have left. Never assume a clean field ahead. And don't let the simplicity of flying a PPC lull you into complacency!

This commandment also means you should not become distracted while flying the aircraft. Don't let your mind wander from the controls and the flight path ahead. Be alert for power lines and other obstructions in your path. Always maintain a flight path with options!

4. Build your wing before heading to the sky.

A ram-air chute needs to be shaped into a perfect wing before takeoff. Before the wheels leave the ground, perform an LOC check:

L: Lines clear and unrestricted

O: All cells Open, and

C: Wing Centered overhead

Never assume that the wing is built and that it is safe to go airborne without visual verification. During your rolling preflight, make an LOC check before you go to full throttle. Once the wing is built and properly loaded and the PPC leaves the ground, we get to fly perhaps the safest aircraft ever invented. But you have got to build that wing before you leave the ground.

This commandment applies to touch-and-go-landings, too. In fact, in PPCs, you should think of these maneuvers as touch, taxi, and go. If you touch down in a crosswind or land a little harder than usual, you risk the chance of losing that loaded, cleanly inflated wing. Make an LOC check before you go airborne each and every time.

5. Know your limitations.

Don't guess at your limitations; know them. Don't think you can perform a specific flight maneuver until you know you can! "I think I can" is a devil sitting on your shoulder. As soon as you hear that voice, stop! Reposition your thinking and your aircraft to take another flight path option.

6. There is never a need for an emergency takeoff!

Adhere to the three "go/no-go" rules.

■ No. 1—If anything "feels wrong" during your preflight, whether it's a gut feeling or you are unsure if you have a friction knot in your lines during your initial wing inflation—shut down! Humans have an incredible ability to sense trouble. Call it intuition or ESP. Yet we ignore this tremendous gift. How many times have you felt something was wrong before doing something—but you did it anyway, and something did go wrong? "I knew I shouldn't have done that," you think. Even if you think these are silly thoughts, would it cost so much time and energy to verify everything is okay one more time? If in doubt—don't go out! You know the saying, "It's better to be on the ground wishing to be in the air, than in the air and wishing to be on the ground!"

■ No. 2—Before takeoff, mark a mental point on the field as your go/no go point. Then, during your takeoff roll—after you have completed your rolling preflight and added full power—do not pass that point if your wheels have not left the ground. If you pass that point and you are not

Practice, practice, practice; prepare, apply, rehearse! There is always much more to learn.

off the ground—abort the landing and shut down!

■ No. 3—It is not good enough to just be off the ground. You need to verify that you are climbing at a rate that will allow you to safely clear any obstacles around the field. You may be surprised at how effective wind rotors over trees or buildings can be at keeping you from obtaining an adequate climb rate. Consequently, your go/no go point should be far enough from the end of the field that if you need to shut down, you can still safely put the aircraft back on the ground.

7. Don't fly over anything that you can't land on.

Considering your altitude and glideslope, always maintain landing options. Yes, you can fly over that lake as long as you are certain you can safely make it to an uninhabited section of shoreline if the engine fails. Remember, one of the first statements in your engine manual is: "This is NOT a certified engine—this engine will quit at any time." They weren't kidding. When flying over any area that does not allow a safe landing site, stay high enough to have at least one alternate site in mind. Then, if/when the engine stops, you can glide to one of your preselected landing locations. Also, the terrain of your landing site is more important than the wind direction at that site.

Altitude is your friend! The higher you are the more time you have to prepare for an emergency landing, and the more landing site options become available to you. Powered parachute pilots love to fly low, and that's acceptable if you have an "out."

8. Adhere to a flight code.

Adhere to a code of flight that will dictate not only when to fly, but also when to…

■ Educate other pilots. Are you sure you want to ignore the unsafe antics of a new pilot? Are you sure his or her antics are not going to directly affect your ability to fly in the future? No one likes confrontation with another person. However, you can be tactful and help preserve the good reputation of powered parachute pilots.

■ Endorse or not endorse another pilot. In any flying "community," friendships develop, especially between instructors and student. If your new friend wants to become an instructor, will you offer your endorsement if his or her skills are minimal? Would you put someone you love in that second seat? Have your signature carry your integrity.

■ Ground another pilot. If you are a certificated flight instructor or training under an ultralight training exemption, and you witnessed repeat offenses to the exemption and/or the rules of safety, you need to act. If you value the status of your certification, you need to prevent unsafe actions. Could you be comfortable with your decision not to interfere if someone was injured as a consequence?

9. Think ahead of the aircraft.

We talked earlier about landing options, but it is also important to maintain flight path options. Before you get caught between two canyon walls that are too narrow to make a 180-degree turn, climb out of the canyon and clear the walls before you make your turn. Keep your mind two or three maneuvers ahead of your current flying position.

10. Don't stop learning!

Practice, practice, practice; prepare, apply, rehearse! There is always much more to learn. Our minds and our skills only get old when we lose the desire to keep learning and improving.

Until next time, remember that the easiest way to solve a (flying) problem is by avoiding it!

Frederick Scheffel is the author of the PPC Guide & Training Manual. He is also the lead advanced flight instructor of SkyTrails Ranch Inc.—a full-time, year-round PPC training center in the beautiful color country of southern Utah. For more information, visit *www.SkyTrailsRanch.com.*