



RWR Pilot Training



Malibu - Mirage - Meridian

*Insurance Approved Initial & Recurrent Training Programs
Designed to Make Your Flying Safe and Enjoyable
Provided When and Where You Choose*

Summer Flying Tips for the Matrix - Malibu – Mirage – Meridian Pilot

10 Things to help make your Summer Flying Safe and Enjoyable

By Richard W Rochfort, ATP, MCFL, CFII, MEI

Even if hot weather does not warm your heart, summer can be a great time for flying. Warm air makes for leisurely pre-flights, and intimate VFR visibilities, however a dark side potentially lurks behind the allure of fun in the sun and exotic destinations. While the following comments by no means constitute a complete list, I would like to emphasize some of the most important considerations that bear repeating about the Summer season and PA46 airplanes. I offer you the 10 items that top my list for safe and enjoyable flying in the warmth of the summer.

1 - Night flying skills - Summer begins for the Northern Hemisphere at the solstice on June 21 when the sun is tracking its Northern most arc across the sky. This means longer days, shorter nights and fewer night flying hours. You should not shy away from summer night flights, which can lead to some of the best experiences you will have as a pilot. Brush up on your night physiology, and get some landing practice to remain sharp; remember those three full-stop landings before carrying passengers to stay legal. Think carefully about overextending your flying days because fatigue, dehydration and the physiological issues of night flight are all known frequent contributors to aviation accidents. You are adding an additional level of risk by planning for an extended flying day.

Consider using the OBS feature on your Garmin to help with night visual approaches when no instrument approach procedure is present. You do have a Garmin or two, right? Compute a visual descent point (VDP) for every approach, visual or otherwise so that you are mentally prepared for the options. Have the anticipated actions required for each option firmly in mind and make no decision before it is time. If you want some guidance on how to accomplish this, plan a session or two with your flight instructor.

2 - Thunderstorms – When the inter-tropical convergence zone (ITCZ) moves north with the sub-tropical jet stream we get warm weather and more active thunderstorm phenomenon in the lower 48 states. It is also true that thunderstorms are not the same all around the US in terms of moisture content and voracity, but they are all the same in that, by definition they produce lightning. Since lightning is a product of atmospheric shear, it pretty much guarantees an unacceptable level of turbulence, clear ice and even hail. The most often cited reason to avoid thunderstorms is the turbulence. A threat which gets little attention is lighting damage to the airframe, avionics or engine. This type of damage is rarely discovered until well after the event. It is usually not dangerous but always expensive.

I am frequently asked about safe distances from thunderstorm activity. Many of us have personal experience with the 20 mile rule, which seems to prevail in the professional pilot community. Since we continue to experience lightning damage, I say 20 miles is not enough. As pilots need to focus on consequences, not probabilities. If the phenomenon is producing lightning, I encourage you to go no closer to lightning activity in miles, than the tops of the phenomenon in thousands of

Fly Safely – Train Often

Phone 410-435-3333 - Toll Free 866-870-8196 - Fax 410-435-7311

www.rwrpilottraining.com - mail@rwrpilottraining.com

Richard W. Rochfort, ATP, MCFL, CFII, MEI - 6031 Bellona Avenue - Baltimore, Maryland 21212-2923



RWR Pilot Training



Malibu - Mirage - Meridian

*Insurance Approved Initial & Recurrent Training Programs
Designed to Make Your Flying Safe and Enjoyable
Provided When and Where You Choose*

feet. This means if you want to go between to areas with tops to 35,000 feet, you need 70 miles between them. I suggest that the fancy Sferics, NEXRAD and RADAR should be thoroughly understood and used for avoidance based upon the aforementioned SOP (standard operating procedure). The generosity of your estimate is a function of what equipment you have and your level of experience in operating it. Remember, your SOP is not about probability, it's about consequences. If you don't have an SOP go to my website. One is posted there for you and I encourage you to adopt it as your own and use it.

3 - Summertime Departures – Verify the obstacle departure procedure (if any) and file it as part of your flight plan. Do this the *same way each and every time* (SWEET). You must be familiar with the climb performance capability of your aircraft and you can begin by looking up the data in your Pilot Information Manual (PIM) or POH, next observe your aircraft's performance compared to the chart. Remember, the climb gradients required in the ODP are expressed in feet per nautical mile over the ground, not feet per minute. When you consult the performance chart in your PIM you will need to use pressure altitude. Pressure altitude is the height above the standard datum pressure (SDP) (29.92" Hg, sea level under ISA) and is used for standardizing altitudes for flight levels (FL). Generally, flight levels are at or above 18,000 feet (FL 180), providing the pressure is at or above 29.92"Hg. For calculations involving aircraft performance when the altimeter is set for 29.92" Hg, the altitude indicated is the pressure altitude. Density altitude is pressure altitude corrected for nonstandard temperatures, and is used for determining aerodynamic performance in the nonstandard atmosphere.

Airframe ice – Airframe ice is a consideration for PA46 pilots, even in the summer. Each time a pilot is tempted to ignore a light frost on the wings, the condition seems to be a surprise and no plan is in place. Anticipate early morning frost when conditions are favorable and make a plan to deal with it.

Every year I get a call or two from pilots who ask me about flight into know ice. I received just such a call last summer from a conscientious pilot, whom I will call "Bill". Bill was standing on the ramp in Salt Lake City and, although it was hot and sunny in Salt Lake, there was a forecast for icing and SLD for the route home. Bill's circumstances were compelling, but the answer is always the same: check the FIP (Forecast Icing Potential) and the CIP (Current Icing Potential) reports available at www.adds.com. As a PA46 pilot you are now operating "in the tall weeds with the big dogs". Act like it and use the pitot heat on every flight just like the pros – Same Way Each and Every Time .. SWEET. Make it SOP to turn it "ON" and "OFF" crossing the hold short line; this is the way professional pilots fly. When it comes to SLD, none is acceptable. Endeavor to experience no surprises with respect to ice.

5 - Induction ice - We all know that induction ice is the bane of the piston pilot. I am continually surprised by the number of pilots who fail to share my enthusiasm for the mechanics of this sinister phenomenon. If you encounter visible moisture of any kind (rain, snow, clouds, haze w/ visibility 3 miles or less) while in flight in a Matrix, Malibu or Mirage, open the alternate air door; EVEN in the summer. Folks, this action has nothing to do with air temperature. Do not wait for a manifold pressure drop to verify induction ice. The aircraft will not know the reason for the loss of airflow to the engine and will presume you are climbing into less dense air. The waste gate controller will then command a new waste gate position to compensate for the loss of airflow. This cycle will continue until the waste gate is fully closed. Once the waste gate is fully closed, the manifold pressure will begin to fall, but that indication is now too late, as the engine can do no more, being configured as if at critical altitude. Moving the alternate air door at this late stage may send some of the ice clinging to the back of the filter through the turbochargers which may FOD them beyond repair. Do not close the alternate air door until you are safely on the ground and the turbochargers are spooled down, and/or you are *absolutely* sure no residual ice remains behind the filter in the plenum. And from now on, tell your

Fly Safely – Train Often

Phone 410-435-3333 - Toll Free 866-870-8196 - Fax 410-435-7311

www.rwrpilottraining.com - mail@rwrpilottraining.com

Richard W. Rochfort, ATP, MCFI, CFII, MEI - 6031 Bellona Avenue - Baltimore, Maryland 21212-2923



RWR Pilot Training



Malibu - Mirage - Meridian

*Insurance Approved Initial & Recurrent Training Programs
Designed to Make Your Flying Safe and Enjoyable
Provided When and Where You Choose*

bartender you want your whiskey "neat," because ice gives you a headache.

6 - Visibility – Visibility or lack thereof is responsible for a much larger number of serious PA46 accidents than engine stoppage. While both of these events create surprise, we tend to demonstrate less preparedness for low visibility. It can vary greatly and change quite suddenly even in summer. Anticipate what you need to see and when you need to see it during all phases of flight. Always check for, and use, departure procedures even for the arrival. According to FAR 91.175 visibility is only one of three items needed to descend below DH or MDA. Can you name the other two? Lets say you arrive at the middle marker on an ILS (the one at the beginning of the lighting system di doo – di doo – di doo) with a visibility minimum of 1/2 statute mile, and you cannot see the threshold; in most cases you do not have the visibility required to land. Consider planning and filing an alternate airport for every flight, even if not legally required. Know what pitch and power settings you will use for the missed approach so that you will be confident to miss when the time comes. Train with, and use the autopilot.

7 – Engine Management – Many experienced mechanics have said that a great deal of frictional wear occurs with every engine start, regardless of the ambient air temperature. Considering engine temperature changes, lubrication and vibration extremes, this is probably true. Shutting down probably rates a close second. In spite of this, I have observed pilots who will gladly start the engine twice for every flight to save money on self-serve fuel. Starting the engine costs money in wear and tear on the engine, so think carefully about that trade-off.

Some pilots routinely use the battery to start their turbines seemingly unaware of the huge benefits of a 28 volt start, including longer battery and starter life and cooler starts to name a few. This is also a judgment call, but it must be considered. My advice to any turbine pilot will always be: “In the absence of a compelling reason to do otherwise, always get a 28 volt start”.

We already know that warm weather brings lower visibility and higher density altitude, but I still see piston pilots struggle with hot starts. Grinding away can shorten starter life and create a fire hazard. Consider observing fuel flow during the prime and start phase of flight. With a little practice you will find that your aircraft requires 3 to 5 gallons per hour to run at idle. If you preset the throttle for idle and go for the 3 to 5 GPH flow prior to cranking the starting you will get a nearly perfectly primed engine every time, regardless of the conditions. Remember high density airports may require some leaning during taxi to obtain a smooth running engine. If you use an open hand technique on every takeoff you will never have to worry about advancing the throttle when the engine is leaned. This goes for the short final operations as well.

You use your aircraft with the understanding that doing so will, eventually, cause the engine and airframe to wear out, or at the very least, look and perform somewhat less than perfectly. This is the necessary tradeoff associated with the joy and productivity of personal flying. Fortunately, to some extent, excess wear can be mitigated. Hot weather has ill effects that go well beyond battery performance. The impact on avionics and gyros certainly comes to mind. Be sure that your avionics are being properly cooled.

Some pilots insist on running their piston or turbine engine to a specific temperature. This is a bad idea during any season because temperature is a manifestation of engine health, not a power setting. If you routinely attempt to set the power with temperature you will at the very least, obviate consistent engine performance. More importantly, you could be operating at a power setting which exceeds manufacturer’s recommendations. This is not likely to ever affect safety of flight, but exceeding the manufacturer’s recommendations on a regular basis will void your warranty, shorten engine life and reduce the value of your aircraft. If you are an owner this is almost always just a financial decision, but if you are a professional pilot this is a career limiting move.

Fly Safely – Train Often

Phone 410-435-3333 - Toll Free 866-870-8196 - Fax 410-435-7311

www.rwrpilottraining.com - mail@rwrpilottraining.com

Richard W. Rochfort, ATP, MCFI, CFII, MEI - 6031 Bellona Avenue - Baltimore, Maryland 21212-2923



RWR Pilot Training



Malibu - Mirage - Meridian

*Insurance Approved Initial & Recurrent Training Programs
Designed to Make Your Flying Safe and Enjoyable
Provided When and Where You Choose*

8 - Battery condition - When my daughters reached driving age, the family fleet expanded to three cars, and our AAA membership grew to four souls. The fleet has aged a bit, but up until this summer, our rides have been exceedingly reliable. So I did not renew the AAA membership, which of course, was a big mistake. Within two weeks we had three separate, seemingly unrelated "failure to start" events and enough tow truck bills and inconvenience to pay for "Triple A" for triple years. This experience, and several similar events in aviation, has led me to conclude that batteries contain evil magic which, in unknown ways, causes failure without any obvious signs of impending doom. The battery in your aircraft likes a stable temperature. When the temperature rises on a summer day, the battery is stressed.

The condition of your aircraft battery will change over time, and may, in fact fail at the least convenient time. Consider changing out your PA46 battery every two to three years whether you have had any indications of a problem or not. Try to avoid applying loads to the battery routinely before engine start without the assistance of a GPU (avionics updates, fuel checks, lowering flaps etc). Know that in most applications a GPU is not a "Battery Minder" and it will charge the battery unprotected: do not go to lunch with one plugged in. I suspect most pilots know by now that, without modification, the nose baggage area light in our PA46 does not time out, so if you leave the nose baggage door open the light will remain on.

Deep cycling of the battery is just as bad as overcharging because RG (recombinant gas) batteries have relatively lower rates of internal resistance. This means they behave more like Ni Cad batteries than wet cell lead acid batteries with respect to discharge; that is, they will hold their rated voltage longer, but degrade rapidly once they have reached the end of their service life. This means that failures will occur with less warning. One subtle but sure sign of an impending failure is a battery that does not take a charge from the alternator or generator, or does so incompletely or unusually slowly. Pay careful attention to how the battery recovers from the start sequence, and note any trends. You should also observe how the battery performs under load during the start. Your piston aircraft alternators require a minimum voltage in order to produce electricity. If the battery is below this voltage when you turn on the alternators, the alternators will not come online. Ensure that the annunciator lights are off and that the bus has 28 volts present, otherwise it will be a dark and lonely night.

9 - Dress to survive – As you prepare for your summer flight, consider the terrain to be crossed, the time of day or night, and your destination. Ask yourself the following question: If I were on the ground anywhere along my route of flight, uninjured, with passengers, at night for 12 hours or so, what would I want to be wearing? Without dwelling on these very unlikely albeit scary scenarios, you should be prepared to participate in your own rescue. Carrying everything the survival experts suggest is not always practical and, as a former US Army Green Beret, I can tell you that survival is 90% mental attitude and 10% UHF radio. Consider purchasing and registering a Personal Locator Beacon. You can mitigate a whole lot of risk with a PLB for about \$600. McMurdo makes one called a GPS FastFind, which is registered in your name with SARSAT. The unit pretty much guarantees the arrival of a helicopter within 30 meters of your location in about two hours in the lower 48 states. I fly over 500 hours per year in Matrix, Malibu, Mirage and Meridian aircraft. My rucksack is no longer green and I no longer carry smoke grenades and a UHF radio connected to a UH-1 helicopter, but I always have my SARSAT registered McMurdo PLB with me on each flight. If you participate in any activity which takes you "far from the madding crowd" you should own and carry a registered PLB.

10 - Aircraft limits – Now is a good time to review your aircraft's limitations in the POH. If you do not have a Pilot Information Manual for your home or office, get one, along with a current FAR/AIM as well. Since I consider

Fly Safely – Train Often

Phone 410-435-3333 - Toll Free 866-870-8196 - Fax 410-435-7311

www.rwrpilottraining.com - mail@rwrpilottraining.com

Richard W. Rochfort, ATP, MCFI, CFII, MEI - 6031 Bellona Avenue - Baltimore, Maryland 21212-2923



RWR Pilot Training



Malibu - Mirage - Meridian

*Insurance Approved Initial & Recurrent Training Programs
Designed to Make Your Flying Safe and Enjoyable
Provided When and Where You Choose*

this step to be very important, feel free to contact me. I will tell you why I think this way and I will provide these items to you at “no charge”.

One thing I am seeing more and more as the fleet ages (the aircraft, not you and me); I see avionics stacks which get too hot to touch. The response I usually get is, “they all do that”. No; “they” don’t all do that. In fact, your King avionics stack has an environmental temperature limit of 131 degrees F. If you cannot touch your radios or autopilot control unit without it feeling HOT to the touch, you are exceeding that limit; something is wrong and it needs to be fixed. Don’t take no for an answer.

Summer flying can be safe and enjoyable; you just need to consider the vagaries of the season. I hope these tips help you to enjoy your beautiful and capable PA46 aircraft. Please feel free to contact me with your comments and questions.

Fly Safely – Train Often
Dick Rochfort
mail@rwrpilottraining.com

Fly Safely – Train Often

Phone 410-435-3333 - Toll Free 866-870-8196 - Fax 410-435-7311

www.rwrpilottraining.com - mail@rwrpilottraining.com

Richard W. Rochfort, ATP, MCFI, CFII, MEI - 6031 Bellona Avenue - Baltimore, Maryland 21212-2923