



**April 2024 Newsletter**

## New Mexico Pilots Association

NMPA operates exclusively for charitable, educational, and scientific purposes for promoting general aviation, aviation safety and education, and pilot camaraderie; preserving airfields and airspace; and to engage in any activities permissible for nonprofit corporations, organized under the laws of the state of New Mexico.

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## Table of Contents

- Editor's Log – p 3
- Upcoming Events - p 4
- Here is Your NMPA – pp 5-6
- Advocacy – p 7
- Back Country Beat – pp 8-9
- Day Trips – p 10
- Mountain Flying – pp 11-13
- Obscure & Scenic NM – pp 14-25
- As The CFI Sees It - pp – 26-27
- Tech Corner – pp -28-29
- CFI Resource List – p 30



**April Cover**  
**Magdalena N29**  
**Drop In Anytime!**



# The Editor's Log

by Lanny Tanning



Living the dream in N 60 BF....

## For Pilots, One of Our Fifty is Definitely Not Missing

Baja Colorado? Extreme West Texas? Where??? Sometimes New Mexico gets lost in the geographic awareness hole. But less and less when it comes to aviation. Balloon Fiesta has done a lot over the past half century to put us on the mental maps. Spaceport America...same same.

Now pilots across the nation – who clearly know where we are from aeronautical charts – will also be able to identify us by our state symbol, the Zia. This, thanks to the current edition of EAA's monthly magazine. It isn't hard to spot NMPA's Ken Summer's plane at fly-ins in New Mexico. The Zia is prominently displayed on his Glasair Sportsman.

In the April Edition of EAA's Sport Aviation magazine, Ken's plane is featured in a seven-page article with fourteen pictures. The Zia symbol is very prominent from all angles! Way to go, Ken!



# Upcoming Events

NMPA Members can login and post any aviation events on the [Events calendar](#).  
Or send announcements to [nmpa@nmpilots.org](mailto:nmpa@nmpilots.org)  
and we'll post for you!



April 4-7

[1929 Ford Tri-Motor Tour - Book a Flight!](#)

Albuquerque EAA Chapter 179 is hosting 1929 Ford Trimotor Rides at the Double Eagle II Airport, April 4 (2-5PM), April 5 - 7 (8am - 4pm)

April 10

[Mountain Flying Clinic \(Virtual\) - Part 1](#)

Abbreviated version of NMPA's 3 day live mountain flying clinic, Part 1. WINGs credit available.

April 11-14

[EAA Tri-Motor Tour Stop - Alamogordo](#)

Book a Flight and experience the Golden Age of Aviation!

April 12

[Mountain Flying Clinic \(Virtual\) - Part 2](#)

Abbreviated version of NMPA's 3 day live mountain flying clinic

April 13

[Grants-Milan Wings 'N Wheels](#)

Free Admission. Aircraft registration requested. \$1 off 100LL

April 19-21

[Sacaton/Rain Creek Trailhead Work Party](#)

Register now for the April 19-21, 2024 work party at Sacaton/Rain Creek (NM16) to pour a concrete stoop for the new vault toilet.

May 4

[NMPA Work Party at Reserve Airport \(T16\)](#)

Join your fellow pilots for a springtime work party at Reserve Airport (T16) on Saturday, May 4.

Click on Links for Details

# Here is your NMPA

## John Lorenz, President



John Lorenz is a 6000 hour CFII, MEII, glider, and sand-lot acrobatic pilot. He has given over 2000 hours of tailwheel instruction. During the day he is a consulting geologist.

### What We Do and Don't Do

*Flight Training?* I have received several emails recently from frustrated people asking for help in finding flight training. NMPA is an organization of and for pilots, and although we welcome students and pilot-dreamers as members, we do not and unfortunately cannot offer much help to those who want to take or complete flight training other than providing information and encouragement. This would seem to be counterproductive, i.e., if we could encourage student pilots with dollars or services, we would, in turn, significantly augment our membership.

Though there are many factors, economics underlie the problem: not only do students need to come up with the dollars to pay for their lessons, it is also hard to make money, or even just not lose money, giving instruction or operating a flight school. Flight schools require a continual flow of new students. The dropout rate is high and schools use a very poor business model in that even students who successfully earn a license *also* stop taking lessons. Moreover, a flight school requires a large population base to draw students from since only a small part of any population wants to learn to fly. Freelance instructors have the same problems with the added burden of self-funding an airplane to use for instruction. Buying a trainer is usually not cost effective: you need to give a LOT of lessons to cover payments, insurance, maintenance, and all the other costs of owning an airplane.

NMPA has a kitty, but it would be insufficient to buy and maintain a trainer, plus we don't have a stable of dedicated CFI's, and we couldn't support the liability anyway. Moreover, we're a state-wide organization so where would we base one? The hard facts of economics dictate that while MPA would dearly love to underwrite or otherwise provide for student pilots, it is not in the cards. Our volunteers do, however, work hard to maintain and improve the New Mexico aviation experience for certificated pilots, for student pilots, and for anyone interested in becoming a pilot or just in aviation. We can also connect students with unofficial mentors.



***Winds in New Mexico can be fierce. The wind was too strong for this itinerant J3 to back-taxi for takeoff, so the pilot has us wing-walk him, with the engine running, backwards, pointed into the wind, for a few hundred yards. Sort of like hauling back on a loaded slingshot. He was flying almost as soon as we let go.***



*Flight Opportunities in April and May:* **Grants** airport is hosting *Wings 'N Wheels* on April 13<sup>th</sup>. Free admission and a discount on avgas. This event may be less focused on aviation than some, but Grants has a unique if small museum that is dedicated to the first trans-continental air passenger service. Advertised as *The Lindbergh Line*, it provided a 48-hour transit coast to coast, using Ford Tri-Motors interspersed with overnight train legs. The route passed through New Mexico, sheesh, almost a century ago. Speaking of which, the EAA Trimotor is giving rides out of Alamogordo (KALM) and Albuquerque (KAEG) during April.

Ron Keller is also organizing a work party at the newly rehabilitated **Sacaton** airstrip in the bootheel on April 19-21. Ron has leveraged his dual memberships in the Recreational Aviation Foundation and NMPA to the advantage of both: RAF has deeper pockets but NMPA has the on-site volunteers. The Back Country program is perhaps the most visible of NMPA's efforts, but only because Ron and our volunteers make it so, and because Back Country flying is popular these days.

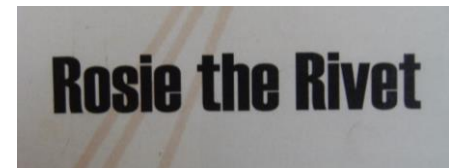
There will be a breakfast fly-in at **Ruidoso (KSRR)** on May 11<sup>th</sup>, and a one-day work party at **Reserve (T16)** on May 4<sup>th</sup>. Both locations are scenic in the way only New Mexico can claim, and both are fairly bursting with history. Watch for further information in announcements on the NMPA website.

April also brings us to the always popular NMPA virtual **Mountain Flying Clinic**, Part 1 on April 10<sup>th</sup> and Part 2 on April 12<sup>th</sup>. This is an abbreviated version of our 3-day in person clinic that is given in the fall. Attend and earn WINGS credit! This spring virtual class is popular, maybe even more so than the full three-day in-person Mountain Flying Clinic given in the fall. It's great that this knowledge is being imparted to folks who maybe don't have the money or time to invest in the longer in-person clinic, or who may not have an airplane to fly on the routes. Bear in mind, however, that despite what bean counters in management like to believe these days, there is no substitute for experience.

*Operating in 4D Environment:* I took the Cadet from east of to west of the Sandia Mountains on a recent morning. No electric system so no ADS-B, not even a transponder, and operating with a hand-held radio. The initial plan was to fly north around the mountains, but low clouds and fog scotched *that* plan. The remaining options were 1) go home and drive, or 2) see if ATC would let through Albuquerque International's Class C airspace. With only 90 horses at sea level, we weren't going over the top of the Sandias (topping out at 10,678 ft). Albuquerque Approach was in fact very accommodating. Once we were through Tijeras Canyon and on the Albuquerque side of the Sandia Mountains they kept us northbound low and close to the foothills, turning west when Tramway Blvd did. The 4-D nature of flight was demonstrated by the severely clear weather for our return flight just a few hours later. Our small GA aircraft move at mother nature's discretion, not at our own demanding and artificial pace.



The abrupt edge of a shaft of rain, illuminated by the evening sun, with dark distant clouds in the background, taken from the back porch last fall. Microclimates anyone?



The placard for a display at the Seattle Museum of Flight contained this interesting typo. There's always room for editing and proofreading. I sincerely hope they have fixed this, but meanwhile it's good for a chuckle.

# Advocacy

by Laurie McGavran  
Advocacy Committee Chair



Laurie McGavran took up flying in retirement. She began with a Sport certificate in a Remos at Santa Fe. She upgraded to a Private Pilot certificate and is now in a small partnership and owns a 1981 Cessna 172RG “Cutlass”. She flies out of Los Alamos. Laurie enjoys seeing her favorite haunts from the air, as well as new and wonderful places. She is an avid amateur photographer, and enjoys trying to take good photos from the air.

## Introducing Myself



I will be taking over the position of Chair of the Advocacy Committee. Jim Covington has put a great deal of work into this position and his shoes will be hard to fill. I will be learning how to fill this role! If you have advocacy issues, please let me know. We have an excellent committee, and I will be relying heavily on them, especially for in-person activities.

I began flying about 13 years ago and still consider myself a novice. I enjoy sightseeing and aerial photography. I love backcountry flying! I hope that, with NMPA's efforts, we can have a thriving aviation culture in New Mexico.

## Department of the Interior Activities

The Federal Department of the Interior has undertaken a couple of things that affect aviation. The first is the Air Tour Management Plans, which were mandated by federal law. In particular, the ATMP for Bandelier affects an operator out of Santa Fe. The NMPA submitted comments making sound arguments that the current tours did not significantly impact any of the values that the National Park Service was trying to protect. Our arguments fell on deaf ears, and all air tours are prohibited over Bandelier and the adjacent ½ mile, below 5000' AGL. Our comments can be found in the Documents section of our web site. As an editorial comment, I believe that Bandelier had decided to ban the tours and went through the requisite process without any plans to listen. I will leave it at that. For your amusement, the plan and associated documents are at <https://parkplanning.nps.gov/projectHome.cfm?projectId=103440>

Slightly farther afield, in Utah, the Bureau of Land Management has published its Draft Resource Management Plan and Environmental Impact Statement for Bear's Ears National Monument. It proposes to close all of the backcountry airstrips except for two – Bluff and Fry Canyon. I looked at the airstrip map that the Utah Back Country Pilots have put on the web, and it looks like there are at least another dozen airstrips in the area. (See <https://utahbackcountrypilots.org/>) The planning documents are at <https://eplanning.blm.gov/eplanning-ui/project/2020347/570>. The public comment period closes on June 11, 2024. This National Monument was created with explicit collaboration with various Indian Tribes. Given that, and the incredibly fast-growing visitation to the area, I think that any pleas to keep airstrips open will be futile. You could argue that airstrips impact the environment less than dirt roads and the plague of OHVs, but that argument is generally not well received.

US Representative Harriet Hageman (WY) introduced HR7660, the Backcountry Aviation Protection Act in response to the Trent Palmer incident. NMPA was asked to sign a letter of support, and we did so. Other groups signing include AOPA, EAA, and various state Pilots' Associations. The intent is to protect backcountry pilots who are landing on remote strips or on private property from the kind of ridiculous enforcement actions that Trent faced for doing exactly what he should have done before landing at his friend's place.

# Backcountry Beat

by Ron Keller



Ron Keller flies a C-182 and has been involved in aviation for the better part of his life. Ron retired from FAA Technical Operations in 2011 and has stayed busy ever since, including working for the New Mexico Aviation Division, and currently serves on the NMPA Board of Directors and as Co-Chair of the NMPA Backcountry Committee. Ron is a Recreational Aviation Foundation Liaison and serves on the New Mexico Airstrip Network Steering Committee.

## April Airstrip Action...

Back at the end of February, I had planned to travel to Negrito Airstrip to drag the runway edges that had cattle tracks. John, Chris and Dennis were going to fly in to join me. I had the NMPA drag loaded on my trailer and I departed home very early on that morning to meet them there around 10 am. The snow had melted a week prior, so I thought everything would be dry enough. My trip was pretty uneventful until I got to the forest road south of Reserve. It was rough, and my trailer ramps kept trying to escape. So due to numerous stops to re-secure things, I was running late. Then I got to an area where there was snow and mud on the road. I had my handheld radio on, and when I heard the guys calling in, I started answering back. I finally was able to pass on my adjusted ETA.

I thought all was well until I exited the forest road onto a smaller one leading up to the airstrip. I stopped and engaged 4WD and locked the hubs and figured that would work. About ½ mile from the airstrip I got stuck. After a few minutes of trying to work free, I decided to hike up to the airstrip and get help. As John mentioned last month, he got stuck taxiing to the tie-down area. My estimation of conditions was off by a bunch, due to unusually heavy snowfall the couple of weeks prior.





## Backcountry Beat, continued

Fortunately, the three of them managed to wrestle John's plane free of the mud, and subsequently hiked down to my truck with me to free my truck from the snow and mud. We turned the trailer 180° and reconnected to my truck to get out of there. Needless to say, no work was done at Negrito that day. They all departed safely, and I couldn't resist stopping at Rainy Mesa on the way back. I did manage to do a little drag work at Rainy Mesa to quell my feelings of guilt and misjudgment. Next time, I think I will give it at least 2 weeks to dry out.

On the brighter side, the Catron County commission voted to approve both the AWOS and the building remodel plans at Reserve Airport. Right now, it is a coin toss to see which project is completed first. I still hope the pilots' lounge will be ready for the annual Gila Regional Fly-in, but even if it isn't, we will still have fun.

Some important dates to remember are these. April 19-21 is a work party at Sacaton Landing Strip to pour a concrete stoop at the new vault toilet. Registration is free and is open on the NMPA website calendar of events. Come and check it out and get a free NMPA work party t-shirt and some free food.

May 4th is a one-day work party at Reserve Airport to paint the pump house and re-stain the picnic tables. Once again, a free t-shirt and free lunch will be provided. Registration is open.

June 7-9 is a special fly-in to celebrate 100 years of the Gila Wilderness. It will be based at Reserve Airport and will include a 120nm circuit around the Gila Wilderness to feature 3 very nice airstrips. Take a photo of a pre-determined object at these 3 airstrips and get 2 tickets for each correct photo. If you don't want to land, you can still take a photo of a pre-determined object from the air, and still get one ticket for each correct photo. After everyone assembles back at Reserve, we will draw tickets to win several prizes that the RAF has donated. The 2nd grand prize is a Bose Bluetooth speaker, and the grand prize is a metal print of backcountry aviation camping, valued at \$500. Registration and further details will be coming soon on the NMPA events calendar.

Finally, I wanted to mention that our survey question about the dates for the Gila Regional Fly-in had low response, but the vast majority wanted to keep it on Labor Day weekend. So, for the foreseeable future, we will plan on that.

**Safety Briefings** are available on the NMPA website for all the [Gila USFS Airstrips](#). Note that some require prior permission – just a phone call.

Another great resource, is [www.Airfield.Guide](http://www.Airfield.Guide), thanks to the Recreational Aviation Foundation (RAF)



Until next month,  
Fly Safe and  
Often!  
Ron

# Day Trips

Lanny Toning



## Look to the Stars!



If someone has an ounce of curiosity, New Mexico will never let them down. Amidst what some see as vast emptiness are stunning things to see. And I'm not just talking about the geologically mind-blowing landscape. For thousands of years, creative human minds have left their mark with ancient cities, chronicles written on stone, irrigation systems, roads, shrines...and many are still evident.

In more recent times, the problem solvers here have developed ways to help look for answers to questions that have occupied human minds since ...well...since here have been human minds. When those questions involve our place in the universe...and the universe itself...New Mexico is right there with tools to find the answers.

While many of these projects can be visited from the ground, the pilot view always adds perspective.

The Magdalena Ridge Observatory site west of Socorro hosts several research facilities that look into both terrestrial and extraterrestrial puzzles. The road up Water Canyon leads to the NM Tech University-built and operated facility. The observatory has a 2.4 meter telescope that can track objects in deep space along with satellites, space vehicles and even military missiles. The observatory is continuing work on the installation of an interferometer that will be able to create images of objects in space 100 times as detailed as those produced by the Hubble Space Telescope. Some early work with initial interferometer units has already been done. As if that's not enough, the adjacent Langmuir Laboratory for Atmospheric Research facility has been providing data on electrical storms and atmospheric lightning for decades. And...NM Tech's work with the National Radio Astronomy Observatory (AKA the VLA) to the west of Magdalena Ridge in the Plains of San Agustin has been providing information about the universe for the past 44 years. When it comes to looking up, New Mexico is at the forefront.

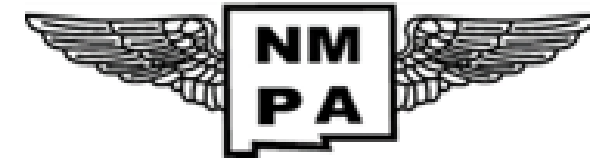


**The 10,600 foot summit of Magdalena Ridge is under R 5113. This restricted area is active during thunderstorm season when Langmuir Lab work is underway. Know before you go.**





## Hold On To Your Hat-Part 2



# Mountain Flying

by Cliff Chetwin



Cliff is a retired National Park Service pilot and a Master/Gold Seal CFI with over 40 years experience flying in the Rockies, Sierras, and Alaska. He currently lives in Kremmling, Colorado and owns a Superhawk.

There are two broad categories of wind that we pilots need to be familiar with. In part one I addressed the general winds which are the winds we discuss in our training and that get in our standard flight briefings. This month I want to address the second category of winds. These are of winds of local origin, known as “local” or “convective winds,” and they can be quite dangerous in the mountains. Both terms are used interchangeably although as we’ll see they are not quite the same thing in that while most local winds result from convection in some cases, they result instead from gravity flows induced by terrain irregularities such as deep canyons and mountain valleys.

There are several kinds of convective winds, all of which must be understood by the safe mountain pilot. The common ones are land and sea breezes, slope and valley winds, whirlwinds, thunderstorms, and squall winds. Depending on the part of the country there are a variety of local names for these winds but for simplicity in this discussion I’ll use these common classifiers. With the exception of thunderstorms all of these winds are found on or near the surface and top out at or below the top of the friction layer. Thunderstorm related winds easily penetrate the friction layer, which is also called the mixing level, and overpower almost any general wind aloft. Local winds are caused by local temperature differences resulting in localized pressure gradients creating strong vertical and horizontal wind flows. In the flats these conditions create turbulence but rarely overpower the general winds. In the mountains however they are often the predominant winds that we encounter overshadowing the synoptic scale pressure gradients and creating potentially hazardous low-level situations for the unwary pilot. Convective winds in the mountains can be up, down, or horizontal, with severe turbulence, shears and sometimes even flows in the opposite direction of the general wind. This can be confusing to many pilots who mistakenly interpret convection to only mean the upward movement of heated air.



Notice the snow being blown by strong convective winds well below the peaks

We know that all winds are produced by pressure gradients, but the distinction here is that the pressure gradients produced by local temperature differences are of such a small scale that they cannot be detected and diagnosed on ordinary synoptic-scale weather charts, and therefore they are not represented in a flight briefing. The problem for the unwary pilot is further exacerbated by the consolidation of flight service stations. These winds can be readily predicted but it requires local knowledge and a modest amount of physics and math, something few briefers possess today. A few decades ago, you almost always walk into a local FSS and be briefed by someone who knew the unique local conditions and who could apply that local knowledge to the winds analysis. In today’s world your odds of the briefer having this local knowledge are worse than your chances of hitting the next Powerball drawing.



Broadly speaking, convective winds in the mountains grow from air adjacent to slopes warming and cooling via both conduction and convection and then being forced upslope or down slope respectively. If upslope the movement is to the crest where it flows off in a more-or-less continuous stream, the direction being determined by the above general wind and any surrounding terrain influence. These convective currents frequently cause daytime cumulus clouds so often observed over mountain peaks and ridges. The nature and strength of all convective winds varies with many factors. As noted already these winds are primarily temperature dependent and elements of the local environment that affect heating and cooling are significant factors. As you might reasonably expect strong daytime surface heating produces the most complex and strongest convective wind systems with the nighttime systems generated by cooling air being weaker and less complex, although still capable of creating mischief for the unwary mountain pilot.

As you might also guess season of the year, diurnal changes, angle of the sun, cloud cover, nature of the adjacent terrain and its cover such as water, vegetation, bare ground, man made features, and the moisture and temperature structure of the overlying atmosphere are key factors. Clearly this is a very complex relationship and analyzing it in its entirety for any given flight is well beyond the time investment most pilots put into flight planning, although an argument could be made that an expansive reading of 91.103(b) requires such an analysis for a safe mountain flight.

A good way for the pilot to begin understanding the potential strength of these winds is to note the valley bottom temperature readings along the proposed route of flight. This will provide an indication of the horizontal temperature gradients, and therefore the surface pressure gradients, and thus the likely strength of the convective winds at various points along the route of flight. AWOS/ASOS reports are a great source of this information along with media reported temperatures for local towns. Comparing temperature readings from these sources with those reported by mountain pass AWOS stations will also provide an approximation of the temperature lapse rate along the route and the associated stability or instability potential of the surrounding air.

An in depth look at each of these convective wind categories would require several volumes which of course we cannot do in our Newsletter format. However, we can briefly examine each and, the potential effect upon the mountain pilot. Since they are not reflected in our weather briefings it will be up to you to determine which need additional study on your part and what specific additional investigation is needed for a given mountain flight.

Whirlwinds: Whirlwinds and dust devils are very common indicators of intense localized heating at ground level where the dry adiabatic lapse can drop to less than a third of the normal lapse rate. In flatter mountain terrain, such as found in the broad mountain valleys of New Mexico and Colorado, air heated at the surface tends to remain in stagnant layers because of inertia, until it reaches a critical point of instability or is released by the mechanical triggering of rougher terrain. When released this air usually takes the form of intermittent bubbles that break free and are forced aloft by surrounding denser air creating considerable turbulence. As they ascend, the bubbles grow by expansion and by mixing with surrounding air, often forming the “fair weather” cumulus clouds that we commonly encounter on summer days where there is not enough moisture to trigger thunderstorm development. If heated enough these bubbles can start spinning and form whirlwinds or dust devils. These vortexes draw on new supplies of rising heated air, such as that found over a paved road or a runway, as they move along the surface. Contrary to common belief they are not created by strong general winds but instead are more likely to occur under clear skies and light general winds. While not as strong or as large as a tornado whirlwinds and dust devils indicate considerable localized instability and can be especially dangerous during approaches and departures, and even during ground operations. They should not be underestimated. Whirlwinds range from 10’ diameter to over 100’, can extend up to 4000’agl, and may have internal wind velocities greater than 45kts. When fully developed they have been observed to twist and topple trees up to 3’ diameter and can have vertical velocities exceeding 25kts. Whirlwinds can remain stationary but more commonly they tend to move horizontally quite quickly and dissipate rapidly once they move away from the immediate heat source so with a little patience the wise pilot can safely avoid them.

Land and Sea Breezes: These are discussed in primary flight training, although often only as they apply to fog generation, and are obviously not common wind factors here in our New Mexico mountains. However, for those of you who intend to fly in the coastal mountains along the West Coast these are very important both in terms of actual wind speed as well as their propensity to create turbulence and IMC conditions. During the daytime the land surfaces generally become warmer than adjacent water surfaces. The air over the land expands, becomes less dense, and the pressure becomes lower than that over the nearby water. As a result of this local pressure difference a local wind (sea breeze) begins to flow inland from

over the water forcing the now warmed air over the land to rise and cool adiabatically. In the absence of strong general winds this rising air flows seaward to replace air which has been drawn inland at the surface, thus completing a localized circulation cell. A general wind blowing toward the sea operates against the sea breeze and, if strong enough, can minimize or even block the sea breeze entirely resulting in a “piling up” of marine air off the coast. When the local pressure difference becomes great enough, this sea air moves inland with the characteristics of a small-scale cold front. Air behind the front is initially cool and moist but warms rapidly as it moves over sun-warmed land and can generate strong convective activity. The sea breeze usually begins by mid-morning, strengthens during the day, and ends around sunset, although the times can vary considerably depending upon local cloud conditions and the overriding general winds. The breeze begins at the coast, then gradually pushes farther and farther inland during the day, reaching its maximum penetration about the time of maximum temperature. The average sea breeze is around 9-13kts but if marine air has been piled up over the water by an offshore wind it may rush inland like a small-scale cold front when the local pressure difference becomes great enough increasing the sea breeze to 20kts or more over the coastal mountains. You should recall that this can be enough to generate mountain waves, rotors, and significant wind shears. The land breeze is the reversal of this process, beginning a few hours after sunset and continuing until reversed by the next sea breeze. The land air having been cooled from below by contact with the ground is quite stable and therefore more laminar and shallower than the sea breeze. It is a more gentle flow than the sea breeze, usually only about 3-4kts per hour and is often negated by the general wind. Thus, the land breeze of is much less concern to us in our mountain flying. Just as peaks and ridge tops in other mountain systems can alter the effects of winds aloft the general winds along an irregular or crooked coastline may oppose the land or sea breeze in one locale and support it in another. Shifting general winds may also cause periodic reversals of these local effects and may result in highly variable local wind patterns throughout the coastal mountain ranges.

#### Thunderstorms:

Along with tornados these are the granddaddy of convective winds. The core diameter found in our western mountains is often greater than 5nm and includes severe updrafts and downdrafts which can exceed 85kts with severe turbulence and large hail. The downdrafts and damaging hail can be found as far as 15nm in front of the storm cloud. I have written previously about mountain thunderstorms and won't repeat that information here except to note what all pilots are constantly told, and far too many ignore, don't mix it up with a thunderstorm. This is especially true in the mountains where terrain or aircraft performance may prevent giving a cell a very wide berth; this needs to be at least 20nm both in the mountains and out in the flats. An old adage in mountain flying is that if you can see the thunderstorm, you're too close. This is obviously an exaggeration, but you get the idea.

#### Squall Winds:

These consist of a sudden steady wind speed increase of 22 miles per hour or more, for one minute or longer, and usually include several briefer and much stronger wind speed changes, or gusts. These winds are created by strong columns of cold, descending air creating a strong a strong updraft at the leading edge of the squall line which then reinforces the descending air, repeating the cycle until the system runs out of cold air. These winds are usually accompanied by heavy rain or snow if there is sufficient moisture or blowing dust if the air mass is dryer. In the mountains these winds can create violent vertical shears and almost instant IMC conditions. Squall winds can also portend the much greater hazard of bombogenesis. Although more common over the oceans these extremely dangerous “bomb cyclones” have been known to occur in the mountains of North America (most recently in 2021 in the Cascades). Doppler radar can “see” squall lines as they develop, which of course is too late to be useful to us unless your aircraft has real time weather capability (and you are paying close attention to it) but the ability to forecast future squall wind generation in the mountains is not robust and therefore difficult to include in our aviation weather forecast. A good rule of thumb in mountain flying is to expect squall conditions are possible anytime you see conditions forecast for other convective activity, such as thunderstorms.

In the final installment I'll cover the most localized, and least understood (by most pilots) convective mountain winds, slope and valley winds.

Until then, enjoy the mountains and fly safely.

# Obscure and Scenic New Mexico

by Jeff Gilkey



Jeff Gilkey has been flying his Aerotrike Cobra (ELSA, weight shift control) since 2004. He has logged over 2400 hours on cross country adventures into nearly every corner of New Mexico, with many extending into Colorado, Arizona, Utah and Texas. For more information, visit his YouTube Channel at <https://www.youtube.com/user/jefftrike>

## Dirty Devil River, Utah

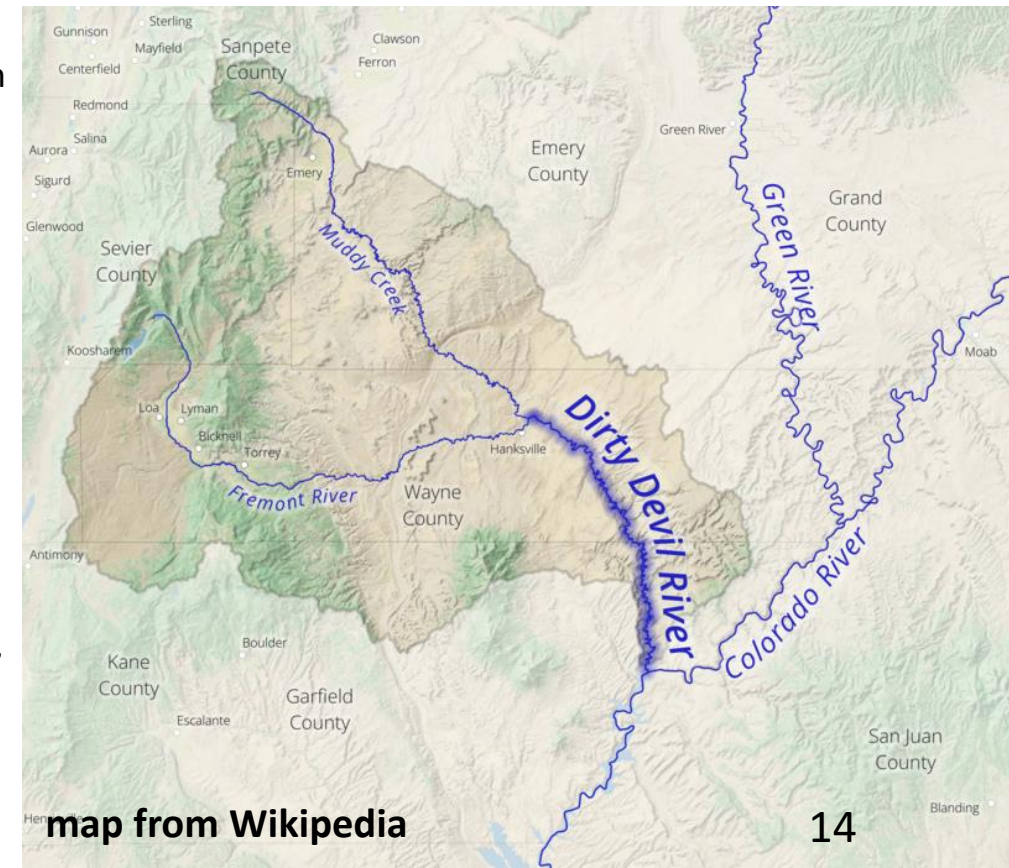
The Dirty Devil River is only 80 miles long, starting at the confluence of the Fremont River and Muddy Creek near Hanksville, UT and ending where it flows into the Colorado River at the extreme northern tip of Lake Powell. About 17 miles north of its confluence with the Colorado River, Happy Canyon (described in last months column) merges in from the east. Another 3.5 miles to the northwest (or 7 miles following the meandering river bottom) is the Dirty Devil backcountry airstrip.

Resuming my story from last month, Paul, Bruno, Adrian and myself had landed our trikes at the Dirty Devil Airstrip during our week-long backcountry flying trip in October 2023. The margins for error are tight at Dirty Devil. The “good part” of the runway is only 1000 feet long, with no safety runouts on either end. To the south, the runway disintegrates into a soft sandy mess before going over a short cliff. To the north, the runway ends at an abrupt higher cliff. You should not attempt landing here for the first time unless you are accompanied by an experienced guide pilot.

The “good part” of the runway surface is firm and smooth, with no hazardous ditches or trees encroaching on the sides. In calm morning or late afternoon conditions, it is very straightforward to land here.

There is no road access here and the 1500-foot-high canyon walls isolate you from the rest of the world. The night skies are extremely dark with spectacular views of the Milky Way.

Adrian had a head cold and would be returning to the warmth of his camper parked at the Huntington, Utah Airport. Paul, Bruno, and I would escort Adrian to the north through the canyon, hoping it was early enough in the day to avoid any strong thermal activity.



map from Wikipedia



## Dirty Devil Gorge



We took off for a late morning (11 am) flight up the narrow part of the canyon which begins a few miles north of the airport. The canyon walls rose up on both sides and surrounded us. This is where the fun would begin.



## Bailing Out



Before long, I was firmly reminded of why I have avoided flying the canyon outside of dawn or dusk. I enjoy gut wrenching views, but gut wrenching thermals are another thing altogether. We climbed up and out of the canyon and agreed to try again at the end of the day when the air would be calm and stable. We parted ways with Adrian and returned to land at Dirty Devil Airstrip.



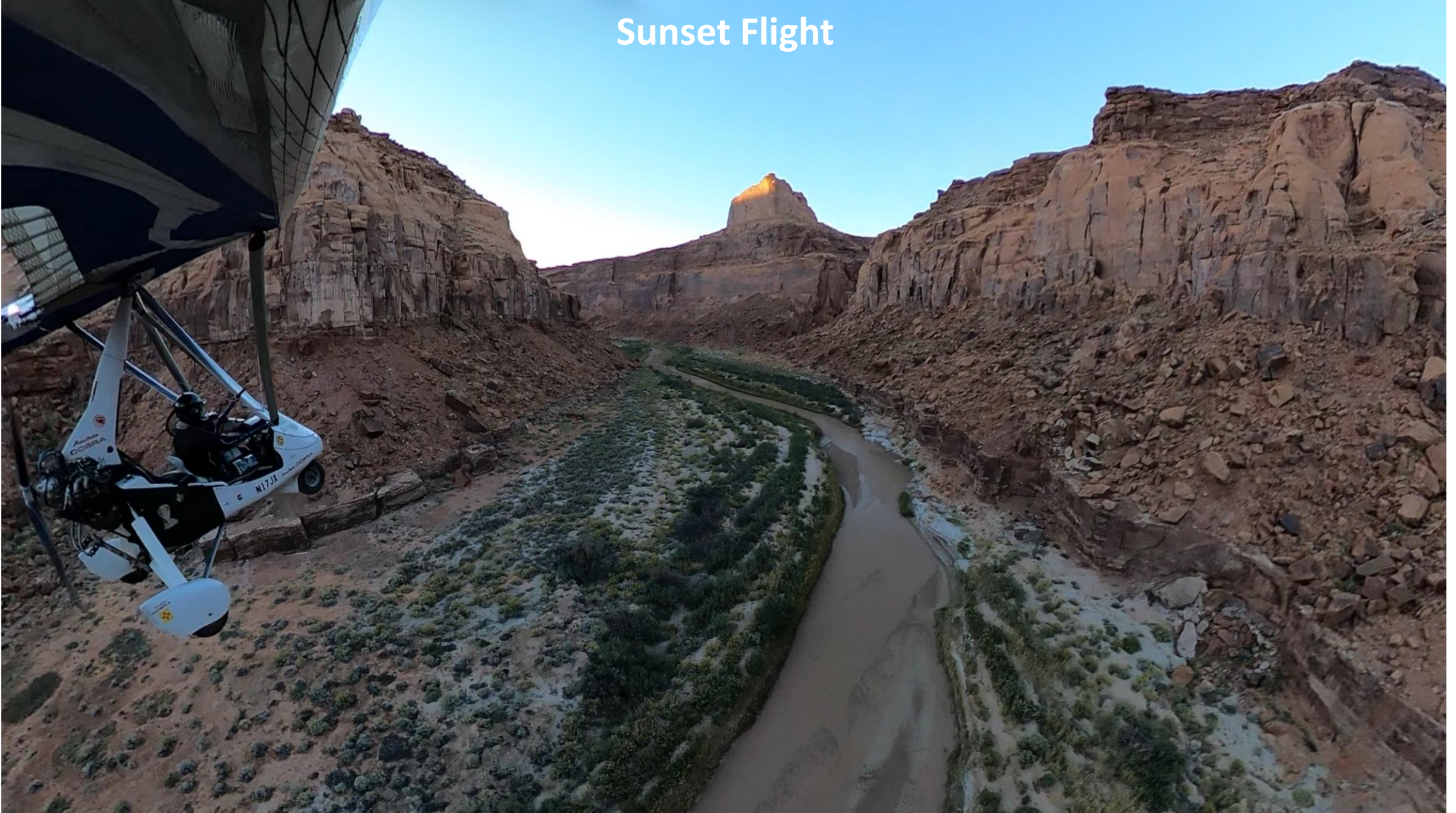
## Dirty Devil Ramp



There was more room in the parking area now. On the left is Bruno's custom Apollo trike powered by a 100HP BMW motorcycle engine with an Aeros Stingray Wing. At the center is Paul's Aeros2 trike with a 912S engine and an Aeros Profi wing. On the right is my Aerotrike Cobra with a 912 engine and a Rival-X wing. We set up our tents and napped in the shade of our wings. Bruno hiked down to the river and took a bath. I passed on the bath – they don't call it the Dirty Devil River for nothing.



## Sunset Flight



The canyon gradually became enveloped in shadow with only the peaks above the rim lit up by the sun. Paul and Bruno headed out first. I was delayed by problems with the remote controls for my wingtip mounted GoPro cameras. I could feel the remaining daylight steadily tick away. Eventually, I just pressed the record button on both cameras, got back in my trike and took off. The conditions were perfect for a canyon run.



## Sunset Cruise



It is was a dream like experience following the gentle turns of the Dirty Devil River in the calm sunset air.





The high canyon walls melted away, although one side would often have a looming wall with nothing on the other side. I continued up the river wondering where Paul and Bruno were. In the corner of my eye, I glimpsed a knob of rock on the left side (behind my wing). Was that Abe Lincoln's head?





I made it to where the shallow canyon widened out near Angel Point for an easy turn around. Still no sign of Bruno or Paul. I turned around here and retraced my path back down the canyon.





A few moments later, I picked up Paul's ADSB signal. He was flying above the rim (to avoid me) and dropped down into the canyon behind my trike. Lincoln's Head came into view again. I was relieved to find I had not imagined it earlier.

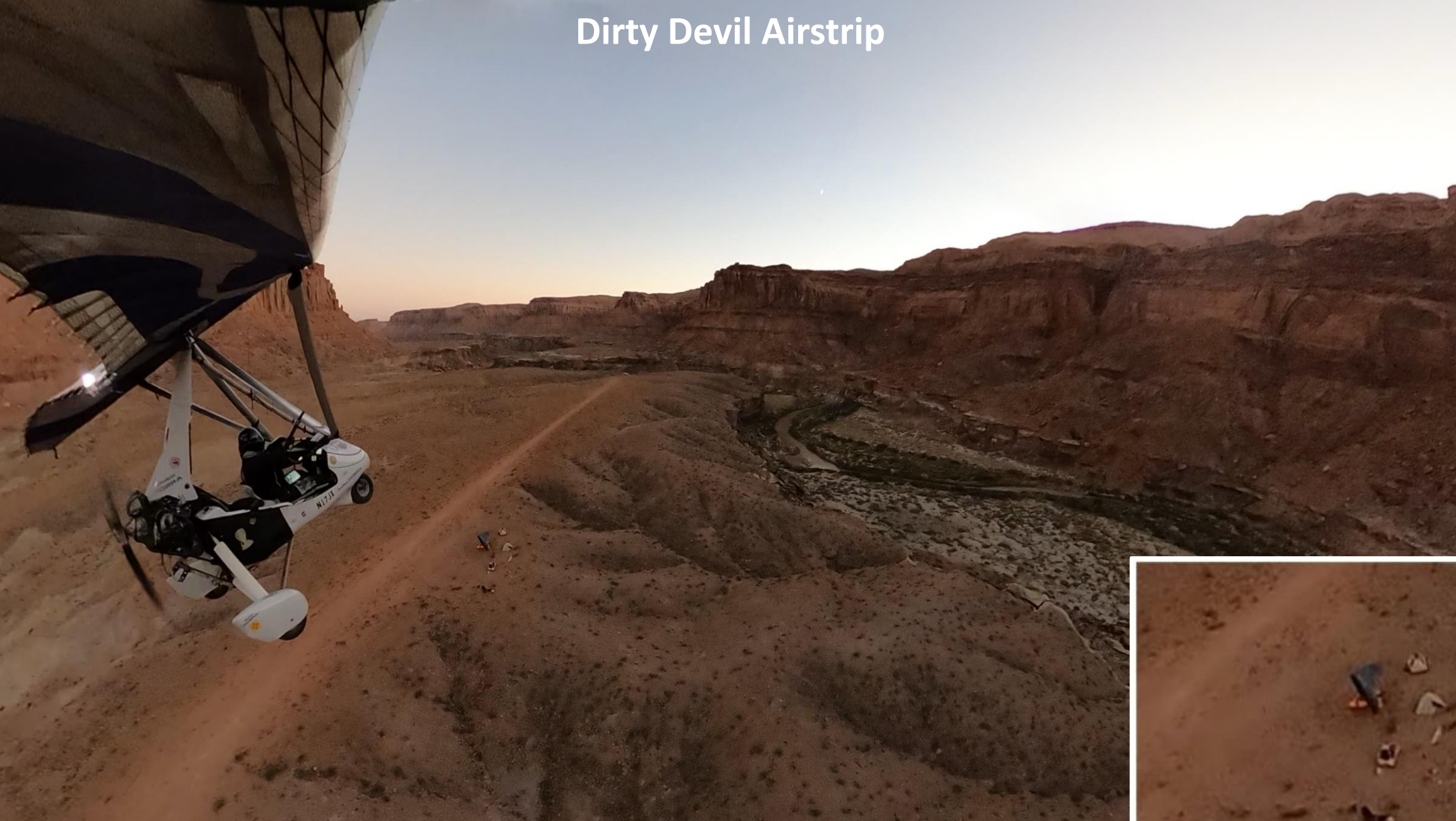




It was so peaceful and calm, I had to continuously remind myself to stay focused and alert while following the bends of the river. This arch-like feature on the canyon wall was magnificent.



## Dirty Devil Airstrip



Paul and I made it back to Dirty Devil Airstrip and found Bruno's trike was parked by our campsite. He had landed just a few minutes earlier. We landed and had a great dinner around the campfire.

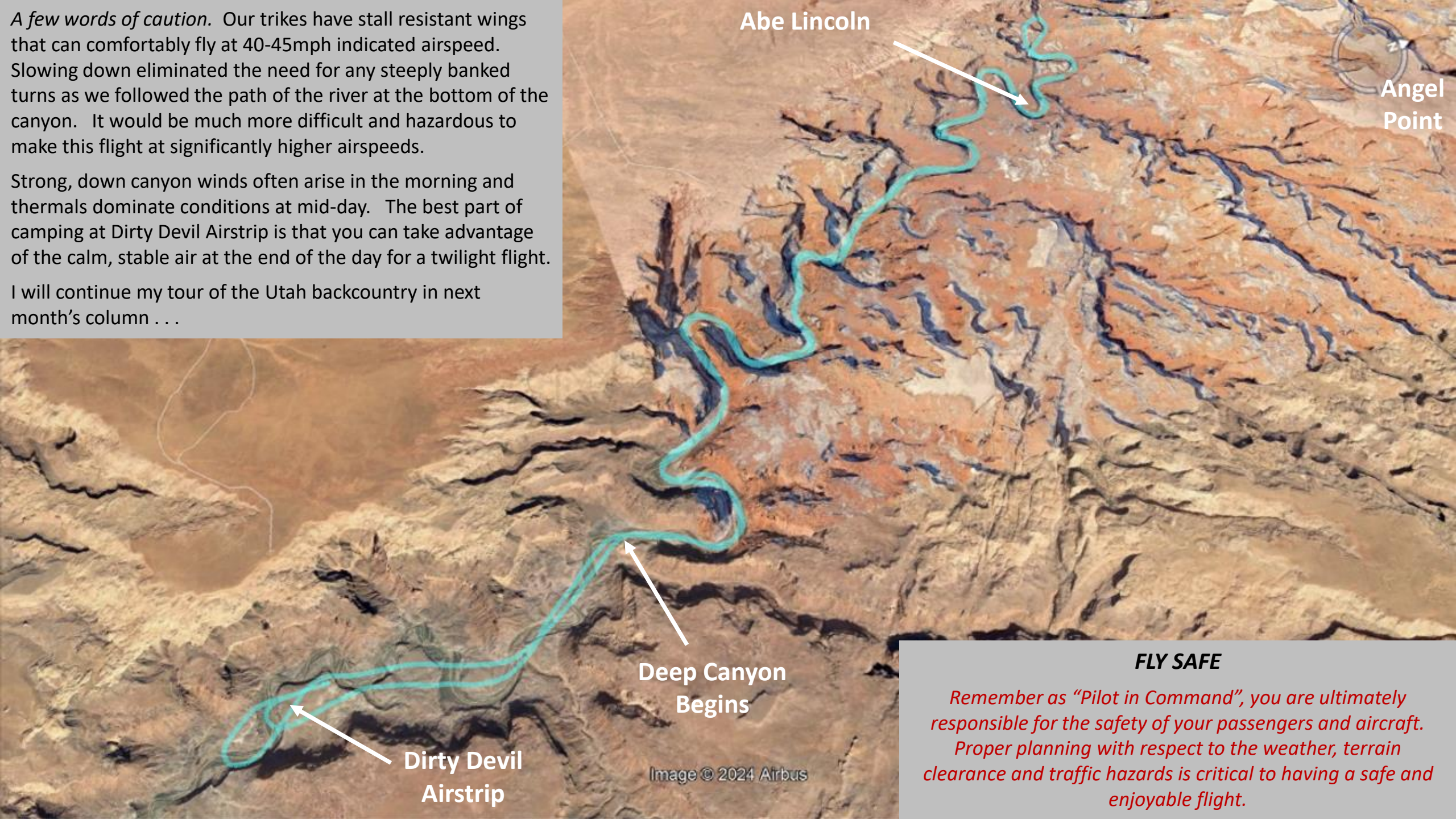




*A few words of caution.* Our trikes have stall resistant wings that can comfortably fly at 40-45mph indicated airspeed. Slowing down eliminated the need for any steeply banked turns as we followed the path of the river at the bottom of the canyon. It would be much more difficult and hazardous to make this flight at significantly higher airspeeds.

Strong, down canyon winds often arise in the morning and thermals dominate conditions at mid-day. The best part of camping at Dirty Devil Airstrip is that you can take advantage of the calm, stable air at the end of the day for a twilight flight.

I will continue my tour of the Utah backcountry in next month's column . . .



Deep Canyon Begins

Dirty Devil Airstrip

Abe Lincoln

Angel Point

Image © 2024 Airbus

**FLY SAFE**

*Remember as "Pilot in Command", you are ultimately responsible for the safety of your passengers and aircraft. Proper planning with respect to the weather, terrain clearance and traffic hazards is critical to having a safe and enjoyable flight.*



# As the CFI sees it

by John Lorenz



John Lorenz is a 6000 hour CFII, MEII, glider, and sand-lot acrobatic pilot. He has given over 2000 hours of tailwheel instruction. During the day he is a consulting geologist.

## STUPID STUFF: TAXIING

*Learning to Taxi:* When learning to taxi, many students have to be told to sit on their hands. The yoke sure looks like a steering wheel so they get flustered when the plane doesn't turn no matter how fast or how far they turn the yoke. "What do you mean, you steer with your feet?" And it takes a couple lessons just to remember which pedal turns the plane in which direction. But that's only part of the story, students also need to remember that their new vehicle is about 34 ft wide, not the mere 7-ft width of the big 1959 Chevy Impala convertible they learned to drive in (google it: classic lines but a boat to drive). Plus, now there is a dangerous whirling scimitar thingy out in front.

*Who Cares?* But all that is old hat to an experienced pilot who is comfortable and competent while taxiing. Just don't get complacent. While taxiing, the plane is often close to expensive, immovable objects such as fuel pumps, runway signs, and parked airplanes, and *inattention* will *get* your attention. Even if you have taxied successfully from your hangar to the runway a bazillion times, don't assume the route is obstacle-free; cars, trucks, and airplanes are mobile, and some chowderhead may have parked closer to the taxiway than usual today. If not today, some day they will. Things change so keep track of your wingtips. And mind the tail of the plane, sticking out behind you like a bustle dress from the 1890s, when making a tight turn; a swinging tail can hit things too.



The results of distracted, or at least inattentive taxiing: the shattered fuel pump, and the prop of the plane that recently taxied into it, at my home airport.





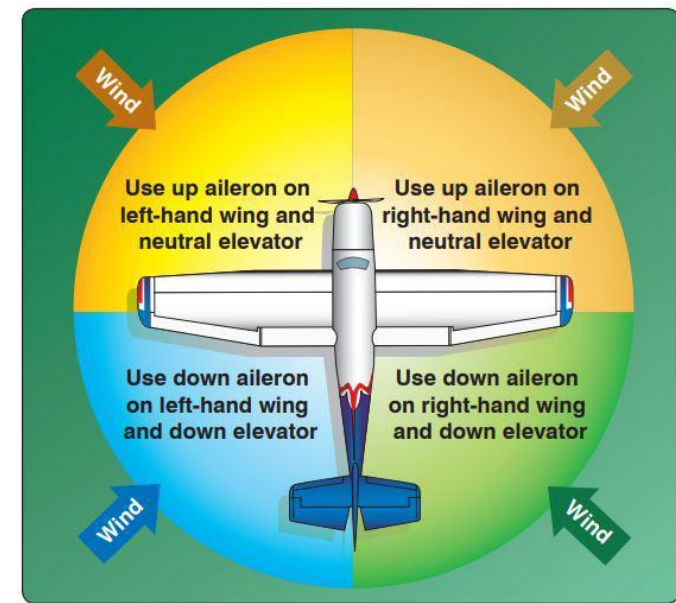
*The Centerline is Useful:* If there's a marked taxiway centerline, use it. That way if you do hit something, at least you can say that *you* were in the right place. Most pilots unconsciously taxi considerably to the left of the centerline, but if you use a sight picture where the line looks to be between your heels you will only be a foot off center since your heels are only a foot off from the airplane midline. Don't change radio frequencies, enter flightplans, text on the cellphone, or do anything that takes your eyes off the taxiway while taxiing. Inattention can cost real money, for both repairs and insurance deductibles/future premiums.

*Taxi Speeds:* Don't be in a hurry when taxiing: think in terms of the measured, deliberate pace of a parade. The rule of thumb used to be that taxi speed shouldn't be any greater than a "fast walk," but that was in the days of grass strips and light taildraggers: an airplane taxiing that slowly at a busy airport nowadays will get run over. Still, be mindful that the kinetic energy stored in a moving airplane increases exponentially with speed, so the faster the plane is taxiing, the longer it takes to brake to a stop and the wider its turn radius must be to avoid tipping over.

*Winds:* Taxiing safely in a strong wind also takes some thought. Basically, you want to hold the flight controls so that a quartering wind hits the top of the upwind aileron (aileron up for a quartering headwind, down for a quartering tailwind), to keep the wind from lifting the upwind wing and flipping the plane over. Elevator position also varies with wind direction, but it's different depending on whether you're in a tricycle or conventional-gear airplane. Cessna puts out a good chart for control positions while taxiing in the wind in their POH. And religiously avoid taxiing behind the strong artificial winds produced by any big airplane, jet or prop, with its engine running.

*Parking:* Taxiing includes thinking ahead about obstacles and winds when maneuvering to parking. If the wind is strong, park pointed into the wind for fueling and chock it. It's a helpless feeling when the wind weathervanes the plane to push the wing you are leaning against away from you, especially if you are on a ladder with an active fuel hose in hand. And more than one airplane parked crosswind has been weather-vaned by the wind to bang into a fuel pump.

*Etiquette:* Be aware of which way the prop blast is directed when doing a runup. Folks should anticipate the runup of an airplane and not to taxi up close behind you, but it doesn't hurt to be cocked at an angle to the taxiway so your prop blast isn't aimed directly at them, especially in dusty conditions. By the way, don't hit the starter at the same time you call "Clear!": that totally negates the warning call, which is supposed to give anyone working or sleeping beneath the engine time to stumble frantically clear of the prop before it starts turning.



Flight control positions that will prevent a tricycle-gear airplane from flipping over while taxiing in windy conditions. From <https://fly8ma.com/topic/taxiing-in-the-wind/>



Or you can let someone else taxi the plane for you. This itinerant Stinson recently made a precautionary landing on a road east of Albuquerque due to weather. They trucked it, intact, to the nearest airport for takeoff, and continued their trip two days later. Photo by Larry Shapnek.

# Tech Corner

by Will Fox



## Titanium

Titanium is a fascinating material. It is as strong as high strength steel but 45% lighter. In fact, it has the highest strength to weight ratio of any structural metal. It is highly resistant to corrosion and fatigue cracking, maintains a high strength even at 800 F, and has a stiffness that is almost twice that of aluminum. It was the only material that could meet the operational requirements of the SR71 and resist the high temperatures of sustained operation at Mach 3.

There are several grades of titanium. Grade 5, commonly known as Ti-6Al-4V, is one of the strongest with a tensile strength of 140,000 psi. When compared to 2024-T3 aluminum which has a tensile strength of 62,000 psi and is commonly used on GA aircraft, it is more than twice as strong. Titanium has an elastic modulus (stiffness) that is half-way between that of aluminum and steel. This makes it deflect less under load than aluminum but springier than steel. Titanium also has excellent fatigue properties and has a well-defined endurance limit unlike aluminum.

These mechanical properties make titanium an excellent choice for many applications in the aircraft industry. The B787 airframe uses about 20 tons of titanium and the A380 uses a whopping 75 tons of it in each plane. It is also used extensively in the F22, F35, C17, and the UH60.

Titanium forms a strong and durable oxide that makes it very resistant to corrosion. It is one of the most bio-compatible metals. It is commonly used in surgical implants like hip implants, dental implants, and heart stents. It also has many architectural applications because of its unique properties.

Titanium can be challenging to form because of its strength and high melting temperature. It is very tough and that



The skin of the SR71 is made of titanium in order to withstand operating temperatures over 600 F when traveling at Mach 3 .



This aerial view of the Guggenheim Museum-Bilbao in Spain highlights the titanium panels that cover the structure.



can make it difficult to machine with anything less than cobalt or carbide tools. It can be welded using either tungsten inert gas or electron beam techniques. The F-14 Tomcat's massive 20-foot-long titanium wing carry through structure was welded together using electron beam welding.



I used 37 pounds of titanium in my Pegazair homebuilt aircraft. Most of it went into the main gear legs and the tail spring. The rest of it went into structural brackets, heat shields, and the defroster manifold. Why the defroster manifold? Because it looks cool and doesn't corrode:-). The Pegazair originally used Piper Cub-like welded steel tube main gear and an aluminum tail spring. I wanted something tougher for back country flying and decided that a titanium spring gear would be more aerodynamic and stronger for the same weight. I bought a 20-ton Harbor Freight hydraulic press and welded up some steel fixtures to help form the gear. I ordered some  $\frac{3}{4}$ " thick titanium that was waterjet cut to the shape I needed. I rigged up the fixtures and the titanium leg to start bending it, and that was when I found out how strong Grade 5 titanium really is.

The titanium main gear leg was 6" wide where I needed to bend it. I broke the press before I ever came close to bending it. I rebuilt the press and made it stronger and tried again. The 20-ton hydraulic jack did not have enough force to permanently deform the titanium. It would bend the gear leg a little, but it would just spring back. I bought a 40-ton hydraulic jack and tried that and it broke the press again. I welded a big I-beam across the top of the press and re-enforced a few other parts that were giving way and tried again. The titanium gear leg had finally met its match and began to bend. It ended up taking 86000 pounds of force to put the 45-degree bend in the main gear leg that I needed. The tail spring was much easier, and I was able to bend that by hand using a 10' cheater bar made from 3" rectangular tubing with  $\frac{1}{4}$ " walls.

Through some miracle the gear legs came out pretty symmetrical, and I only needed a few shims to get the toe and camber properly adjusted. The gear works really well. The titanium gear absorbs bumps better than the bungee gear ever did. The tail spring is really tough, and I haven't broken it yet. I ground the main gear into a semi-airfoil shape using a heavy-duty grinder. It only took about two days and I had to wear welding goggles because the white-hot sparks were so bright. The plane is noticeably faster with the streamlined spring gear. One thing is for sure: if the Pegazair is ever in a crash, the landing gear won't have a scratch on it:-)



The titanium carry through structure for the F-14 Tomcat was electron beam welded together.



Homemade titanium gear leg on my Pegazair.

# CFI Resource List: A Member Benefit for Students and CFI's

**NMPA Certificated Flight Instructor Resource List** updated 3-28-2020  
NMPA members who are CFI's and who would like to be listed here, or who need to modify their information, please contact John Lorenz at [johnlorenz@geoflight.net](mailto:johnlorenz@geoflight.net)



**Instructor: Suzanne Azar**

Contact: email [suzanneschmeckazar@gmail.com](mailto:suzanneschmeckazar@gmail.com)

Primary areas of instruction: *Private, Commercial, Instrument, Multi-engine Instrument*

Airports you instruct at or will travel to: *El Paso, TX, Santa Teresa, NM, and Las Cruces, NM*

Do you have access to an airplane for instruction and if so what kind: *Cessna 172 and Cessna 182*

General summary of experience: *I have been a pilot since 1980 and a flight instructor since 1984. Among my many students I taught both of my daughters to fly. I have flown numerous air races through the US, Bahamas, Hawaii, and Canada. I hold a commercial pilot's license and am rated in single engine, multi-engine, glider, and seaplane, with an instrument rating. I fly a Lancair IVP a pressurized, retractable, high-performance composite experimental as my personal aircraft, and instruct in Piper and Cessna singles. As a Multi-engine Instructor, I have flown many aircraft from the 1956 Apache to a 690B Rockwell Commander turboprop. I also hold licenses as basic and advanced Ground Instructor and have earned the FAA's "Gold Seal" flight instructor license.*

**Instructor: Mike Dellas**

Contacts: (505) 699-7297, [captrellas@aol.com](mailto:captrellas@aol.com)

Located at Santa Fe (KSAF)

General summary of experience: *Currently flying for AAL, experience in Aeronca Champ to a Twin Beech D18/Douglas DC-3 and aerobatic planes such as Citabria and Decathlon, owned and operated a Luscombe, C-180, and C-310 including instruction over 45 year flying career.*

**Instructor: Scott Burnett.**

Contact: email [ssburnettnm@gmail.com](mailto:ssburnettnm@gmail.com)

Single and multi-engine CFI teaching in the student's aircraft. Specializes in tailwheel and Maule check-outs, private instruction, and ferry flights. Located at Mid Valley (E98)

**Instructor: Peter D Murphy**, contacts [peterdenismurphy@gmail.com](mailto:peterdenismurphy@gmail.com), 505-946-7777. CFII MEII LSP. Flight Design CT

**Instructor: Diane de Souza** - Taos - contact info is [dyeingtoweave@gmail.com](mailto:dyeingtoweave@gmail.com)

*"Information about these CFI resources is provided for the benefit of our CFI and student members. The NMPA and its officers do not endorse any of these resources. We urge all members, CFIs and students, to use good communication skills and show respect in all of our engagements with other members."*