

Turf Wars Part 2

Non-Paved Runways Operations in Cirrus Aircraft

by Matthew McDaniel

In Part 1 of this article, I discussed both sides of the debate about landing Cirrus aircraft on non-paved runways and the insurance and training considerations you should take if you decide to do so. Part 2 will discuss practical applications of non-paved runway operations, operating from various non-paved surfaces, and precautions and techniques appropriate to each. I will also introduce you to a number of unpaved airports in the United States and internationally and the Cirrus pilots that operate from them regularly.

Last summer I was to fly an R9-equipped SR22 to an airport in the western part of Wisconsin and give a demo flight to a pilot contemplating an R9 upgrade. There was an active NOTAM stating the airport's runway would be closed the following day for resealing and repainting, but my mission would be in and out that day. So, off I went.

Upon arrival at Viroqua, Wis. (Y51), I discovered a paved runway with an obviously fresh coat of sealant and large yellow X's lying adjacent to each runway threshold – so much for the accuracy of the NOTAM dates! I put myself into a holding pattern above the airport and called my client. Yes, he could meet me at another airport, but it would take him over an hour to drive there, while I could fly in 10 minutes, so I called the airport manager's number (you've got to love having AOPA's airport guide right in your phone). The manager apologized for the errant NOTAM, explaining the decision was made to close the runway a day early to take advantage of cooperative weather. "But," he said, "the grass runway is still open; I mowed it yesterday, it's dry, and you are welcome to use it." I quickly checked performance numbers and after a low pass to visually inspect the runway, I made an uneventful landing. We conducted the demo flight and I landed on the grass a second time upon our return. Departing, just as the sun began to set, I reflected upon how useful my comfort level with turf runway operations in Cirrus aircraft can be at times like these. My mission

The Bar Ten Ranch (1Z1) in its present condition. The runway was recently upgraded to chip seal with a dirt overrun on the south end. The surface is the least of the challenges for the pilot to consider at this little mountain airport; it is also narrow, sloped, not perfectly straight, and has numerous terrain issues to consider.

was completed without any real delays, no incurred diversion-related expenses, the client was happy, and I'd be home for dinner.

Practical Application

This story is one example of practical utilization of non-paved runways in Cirrus aircraft, when it's the best (or only) option available. There are endless other examples, but let's examine a few of the most common.

Crosswinds: Many airports have turf runways which exist primarily to address non-prevailing wind conditions. Whereas primary paved runways are usually aligned as closely with the prevailing winds as real estate will allow, crosswind runways are often shorter, narrower, and/or unpaved. Why? Economics! Such non-primary runways are underutilized and, therefore, are usually designed for both relatively low cost construction and maintenance. Nonetheless, they serve a critical purpose – giving pilots a safe option when the winds are blowing *across* the primary runway, rather than *down* it. Oftentimes, I have seen pilots choose to wrestle with crosswind landings that match or exceed their abilities, while ignoring perfectly good crosswind runways because they've never become comfortable with the idea or application of non-paved runway surfaces.

Location: Outside of the large metropolitan areas, non-paved runways become commonplace. Many small towns and villages want an airport of their own, but the finances to build and support it are limited. The solution is often non-paved runways. Expanding your capabilities to include these types of airports will expand your potential destination list by literally thousands of locations. This can, in turn, significantly increase your travel efficiency by limiting, or even eliminating, required



Entering right downwind for Runway 01 – a typical desert area, dirt runway – at Pearce Ferry airport (L25) in northwestern Arizona. The crosswind runway is not maintained and is closed. The rapidly falling terrain on departure from Runway 01 can be a strange feeling!

ground transportation, as would be the case if you elect to fly to the nearest paved airport, perhaps many miles away from your intended destination. Convenience is a popular buzzword in aviation, yet many pilots will plan a decidedly inconvenient travel agenda simply to avoid non-paved runway operations. This, to me, is counter-intuitive to why many of us fly in the first place!

Congestion: Recently, I was operating at an airport with a paved and grass runway. Winds were light, so normally I would have chosen the pavement. However, there were three aircraft in the pattern of the grass runway. To have used the pavement would have required crossing through the grass runway's traffic pattern, causing potential traffic conflicts in the air and/or on the ground. To me, the potential safety concerns just didn't make sense. The Cirrus I was flying was every bit as capable of using the same grass runway that the two taildraggers and the ultra-light trike were using, so I sequenced myself into the pattern and landed without causing any interruption to the ongoing flow of traffic. I was a popular guy at the fuel pump, because I was seen as a polite visitor to "their" airport.

Home Sweet Home: Almost every pilot I know harbors at least some level of fantasy about living with their airplane. The rise of aviation communities is one way to fulfill such a dream. It is true that many such communities have paved



Colin Wade's 2010 SR20 G3 parked outside his vacation home and alongside the grass runway of the Pauanui Beach fly-in community (NZUN).

runways, yet even more of them have only non-paved runways, usually maintained to very high standards. If you have ever toyed with the idea of such a living situation, limiting yourself to paved runways, will drastically limit your choices. Or maybe you just want a runway on your current homestead. I've known several pilots who have dedicated a strip of their acreage to a turf runway usually within a short walk of their home. Paving such a home-strip is usually financially infeasible, while prepping and maintaining a turf runway can be more reasonable.

Variety: The Spice of Life or Cause for Indigestion?

Non-paved runways come in many varieties, each with its own personality. Those personality traits can change with weather conditions, maintenance (or lack thereof), and other variables. What should a Cirrus pilot know about each type? The first rule is to educate yourself about the condition of the runway. Talk to the airport manager, the grounds-keeper, and especially to the local pilots. Another common precaution is to visually inspect the runway. If you can visit the airport and walk the runway before actually landing there, that is ideal. If it is not feasible, a low pass for visual inspection can be very revealing.

Grass: This most-common, non-paved runway surface is also typically the most forgiving, but can include big performance penalties the PIC should take into account (see Part 1 of this article in the May/June 2011 *Cirrus Pilot*). They can also be deceiving, hiding imperfections, especially when the grass is not mowed. Grass longer than you would allow your own lawn to get is long enough to at least give me pause. In such cases, previous knowledge and/or further investigation are merited. Yet, if the strip is properly maintained, you will find operations from it to be fairly natural after proper training.

Dirt: Hard-packed dirt runways can be as smooth as pavement. They are easy to inspect from the air and their color, or variations thereof, can easily identify wet or loose areas to be avoided. Obviously, wet or muddy conditions for any significant percentage of the runway can lead to tire-sinking during rollout and/or aircraft damage. Low scrub or vegetation is rarely a problem on such runways, unless it conceals large rocks, holes, or thorny vegetation. Fortunately, areas where dirt runways are most common are the same areas where parched land and sparse vegetation are the norm.

Cinder or Chip-Seal: Cinder runways are probably most common in coastal areas, but I've seen them in a variety of geographies. They might be fairly loose, compressed-hard, or even oiled to keep down dust and prevent erosion from use or rain. With the exception of very loose cinder, these runways are generally very smooth, cause only minor performance penalties, and are predictable. The primary precaution here is related to prop damage. Cinder is very fine, but bigger than sand grains. Power applications should be kept to the lowest possible RPM during taxi. During takeoff, use relatively low power to get the airplane rolling, increasing RPM as forward speed increases,

ensuring maximum RPM is reached before rotation speed. High RPM and low speed are the most-likely combination for picking up cinder, causing prop nicks. Major nicks that cannot be easily filed out of a prop blade by a qualified mechanic are very rare on cinder runways where the above techniques are used.

Coral: Very common in the Caribbean Islands and similar locations, coral runways may be a mixture of coral and asphalt or cement. In either case, such runways are effectively “paved” and rarely present any significant operational abnormalities. Crushed coral runways are more like cinder, except the material is usually made up of larger, but softer, “grains” than cinder or sand. Crushed coral may be loose or packed in the same way that cinder is and the same precautions apply.

Gravel: This surface is truly uncommon in first-world areas, other than in true “bush flying” airstrips. While flying Cirrus aircraft into various non-paved runways is feasible with proper precaution, it is not a “bush” plane, and such runway environments should be avoided.

Caution: *I recommend avoiding non-paved runways (regardless of surface type) that require crossing over paved surfaces (intersecting runways/taxiways) during the ground roll. The transition from paved to non-paved surface might have a “lip” that is difficult to detect visually. This could cause gear or prop damage if encountered at high speed.*

Pre-Flight Pointers

All flights should be preceded by a thorough preflight inspection, however, the intention to utilize unpaved runways should prompt a little extra vigilance. Prop condition and proper tire inflation are two areas where relatively minor imperfections can be amplified when operating from non-paved surfaces. Another area to pay specific attention to is wheel fairing condition. I have identified loose wheel pants and broken/missing fairing attach brackets on at least a dozen Cirrus aircraft over the years, including several times on aircraft that operate exclusively off of paved runways. Grasp the tail of each wheel fairing and move it side to side and up/down. If there is any excessive movement observed, investigate further. A cracked/broken/missing inboard bracket is the most common culprit. Also, the exterior attached bolt often loosens, exposing the fairing to additional vibration, which can elongate the support hole. In one example, I discovered a nosewheel fairing with *both* main support brackets broken completely in half, allowing excessive movement of the fairing. While non-paved runways are not necessarily to blame for such failings, operating out of non-paved runways with such compromised equipment will lead to even greater stresses on the equipment, increasing maintenance costs and possibly inducing failure. The key is to discover such compromised equipment before flight operations begin, regardless of runway surface type.

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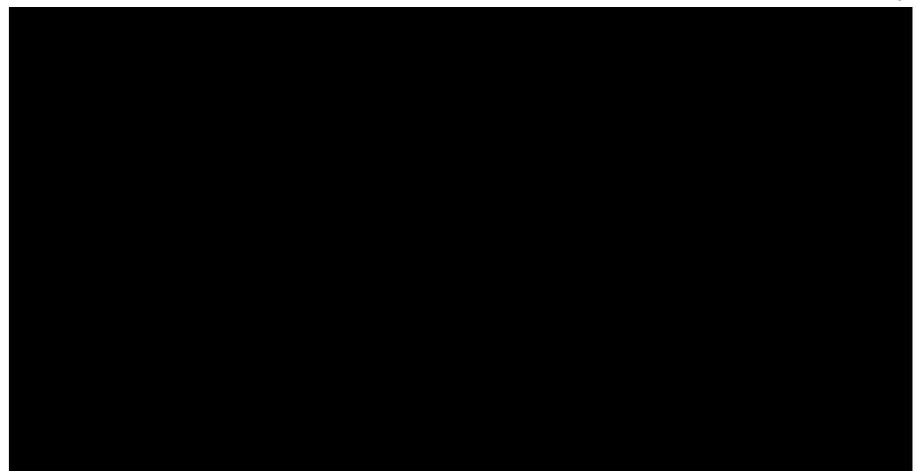
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Turning final Runway 24, in Colin Wade's SR20 G3 at Pauanui Beach airfield (NZUN) in northeastern New Zealand.

The Unpaved Posse: Who and Where Are They?

I've had the distinct pleasure of meeting and flying with Cirrus pilots near and far who regularly operate from non-paved airports. They represent an interesting mix and the list below is totally random and woefully incomplete.

Carl Larson: A Cirrus early adopter, Carl purchased the 147th production SR20 in June 2001. He immediately flew the plane to his farm's 3,500-foot grass runway (6ND2) in North Dakota. One of the most frequent flights he makes is from his farm to his vacation house in Battle Lake, Minn. He bases the airplane there at a 3,000-foot public-use grass airport (00MN). Since his initial SR20, Carl has upgraded through four SR22s and is taking delivery of a new FIKI SR22 in July of 2011. He's based them all on those two grass airports and operated them from numerous other grass runways, often choosing grass over pavement when the region's notoriously strong winds dictate. The harsh winters in North Dakota and Minnesota don't ground him either; he plows/snowblows his grass runway and operates from it year-round.

Colin Wade: One of less than a dozen Cirrus pilots living and flying in New Zealand, Colin flies a G3 SR20 Enterga. His home base of Te Kowhai Airfield (NZTE) is a single grass runway, 2,800-feet long. At times, land-use disputes between adjacent owners have caused a fence to be built across the runway, shortening it to a 2,100-foot useable strip. Colin also maintains a vacation home at the Pauanui Beach fly-in community (NZUN) in northeastern New Zealand, which also consists of only a single grass runway. Colin is not terribly unique among New Zealand Cirrus pilots. They all regularly operate from short/unpaved runways in their Cirrus aircraft, because the vast majority of airports there are unpaved, and restricting themselves to paved runways would be totally impractical. Non-paved airport proficiency is a simple matter of necessity in New Zealand.

Hui Tai Tan: This flying doctor operates his 6-Pack SR22 out of Jandakot Airport (YPJT) in Perth, Western Australia. While YPJT has multiple paved runways, Hui roams the vast

reaches of Oz with his wife, Judith, including transcontinental flights. Whether locally or far from home, Hui operates regularly into dirt, grass, and cinder runways. Hui honed his unimproved runway skills as a missionary pilot in Papua New Guinea, flying Twin Otters. So, while his Cirrus flying is very subdued in comparison, he insists the Cirrus is a perfectly suitable platform for a variety of runway surfaces.

As for this author, I have operated Cirrus aircraft out of many types of unpaved runways, all across the United States and in numerous international locations. A few of my favorites are: Pearce Ferry Airport (L25) on the Arizona/Nevada border, a 2,900-foot dirt runway situated atop and at the edge of a mesa. Bar Ten Ranch (1Z1) on the north rim of the Grand Canyon, a 4,000-foot chip seal runway, nestled into a narrow mountain valley. It is technically a public airport, but the private ownership should be contacted for permission before use. Brodhead Airport (C37) in southern Wisconsin has three beautiful grass runways. It's well maintained and hosts an impressive antique aircraft fly-in every summer. Lee Bottom Airport



Hui Tai Tan poses with his "classic" SR22 on the chip seal surface at Jurien Bay Airport (YJNB), in Western Australia.

(641) is tucked alongside the Ohio River in southern Indiana; with over 4,000 feet of runway, it hosts one of the biggest varieties of aircraft types you'll see at any airport (paved or not). There are many others too, even a few non-paved airports with instrument approaches!

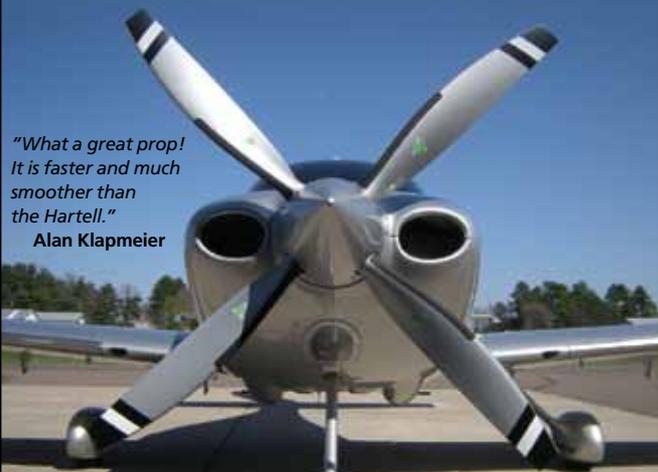
Non-paved airports can offer a number of opportunities and variations that many Cirrus pilots would not experience when limiting themselves to pavement only. However, as with anything in aviation, those unfamiliar with such operations should seek out professional-level training from instructors well-versed in the requisite techniques and requirements. In doing so, you just might realize a whole other level of fun and versatility that your Cirrus can provide. **COPIA**

About the Author: *Matthew McDaniel is a 20-year professional pilot with a background in airline, corporate, and charter operations. He's owned and operated Progressive Aviation Services, LLC (www.progaviation.com) since 2002, specializing in Cirrus, TAA, and Glass Cockpit training. He's been actively instructing for 19 years, has logged over 11,000 hours in 70+ aircraft types, and holds five turbine aircraft type-ratings. He is one of only 35 instructors in the world to have earned the "Master Certified Flight Instructor" recognition five consecutive times. Mr. McDaniel can be contacted at (414) 339-4990 or matt@progaviation.com.*

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