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A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

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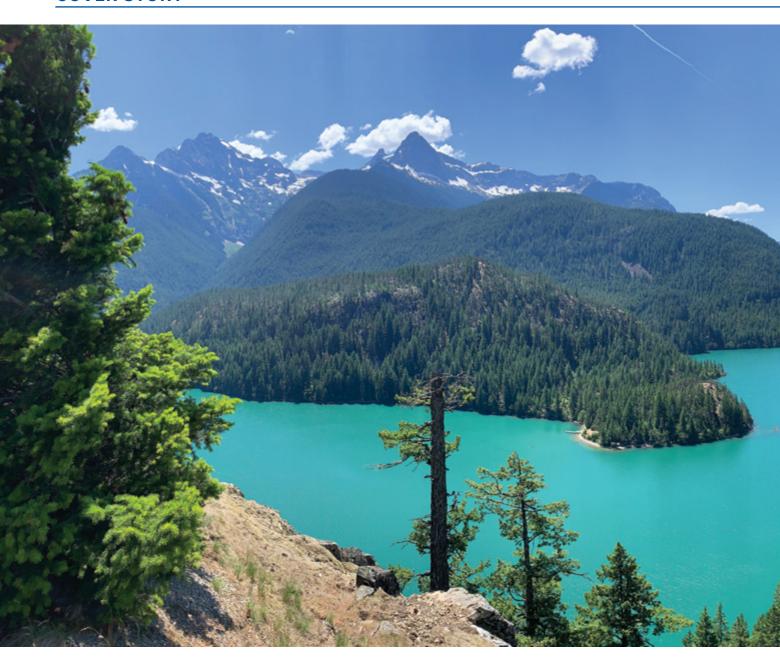
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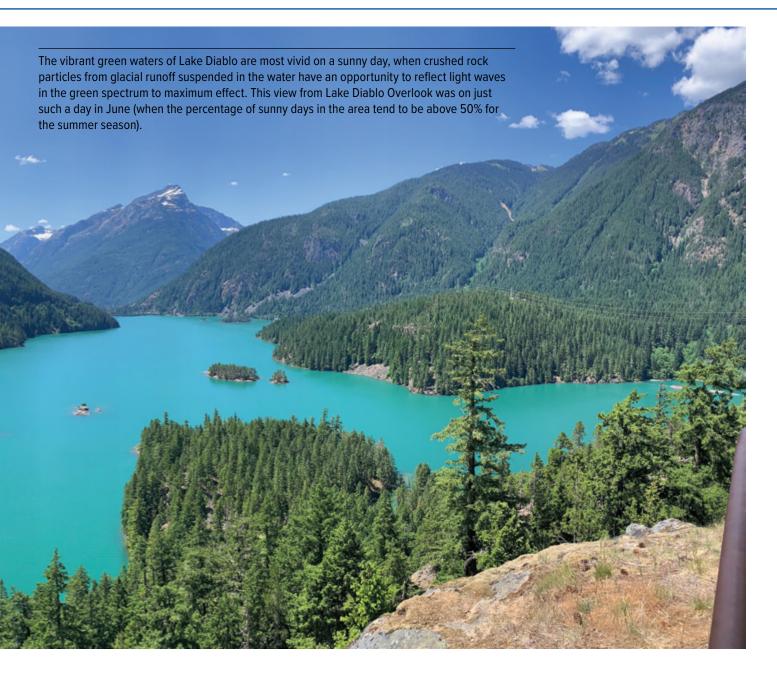
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The Upper Left Corner Part I:

Taking your King Air to explore Washington State's National Park Lands

by Matthew McDaniel



merald or jade. Forest or hunter. Turquoise or teal. Whatever adjective one chooses to add to "green," there is little question you'll find it in Washington. As a state motto, it's never been officially adopted, but Washington has long been called "The Evergreen State" for good reason. Seattle, the state's largest city, is similarly referred to as "The Emerald City."

Never were these nicknames more applicable to me than while touring North Cascades National Park (NCNP). After electing to take the shorter, but much steeper, route back up the Ross Dam Trail, my kids and I sighed with relief upon planting ourselves in the seats of our rental car. A short drive down the north slope of Ruby Mountain brought us to the Diablo Lake Overlook. There, the picnic lunch came out, but even our hunger and fatigue couldn't keep us from lingering at the overlook's precipice, gazing down at Diablo Lake. The vibrant green hue of the waters below seemed otherworldly, especially set against the nearly cloudless blue sky. How could that color possibly be natural?



Park visitors can still drive across the Diablo Dam to view it from both sides or just to transit the Skagit River to take in different areas of the North Cascades National Park Complex. The dam took advantage of Diablo Canyon's solid granite walls that were less than 100 feet apart yet rose 160 feet above the river. The dam took three years to construct, opening in 1930, and began generating power in 1936. At the time, it was the tallest dam in the world at 389 feet high and 1,180 feet long at the top.

"The 400+ miles of trails within the complex range from casual strolls giving a brief sample of the natural wonders of the area, to day hikes to waterfalls, lakes and overlooks ..."

Beyond the Emerald City

The northwestern most corner of the continental United States is well known for its coffee-loving and rain-soaked signature city, Seattle. While much of Seattle is inviting to tourists, the wonders of nature which surround the metroplex on all sides are both wonderful and expansive. Any Pacific Northwest tour is incomplete without at least taking in a sampling of those areas. For Part 1 of this article, we'll focus on those northeast and northwest of Seattle; the aforementioned NCNP to the northeast and Olympic National Park (ONP) to the northwest, plus associated National Park Service (NPS) sites and areas. Fortunately, the entire area is also well-served by all manner of airports, from major international hubs - Seattle-Tacoma International (KSEA) - to small backcountry strips such as Stehekin State (6S9). The airports in between those bookend examples are the most inviting to general aviation.

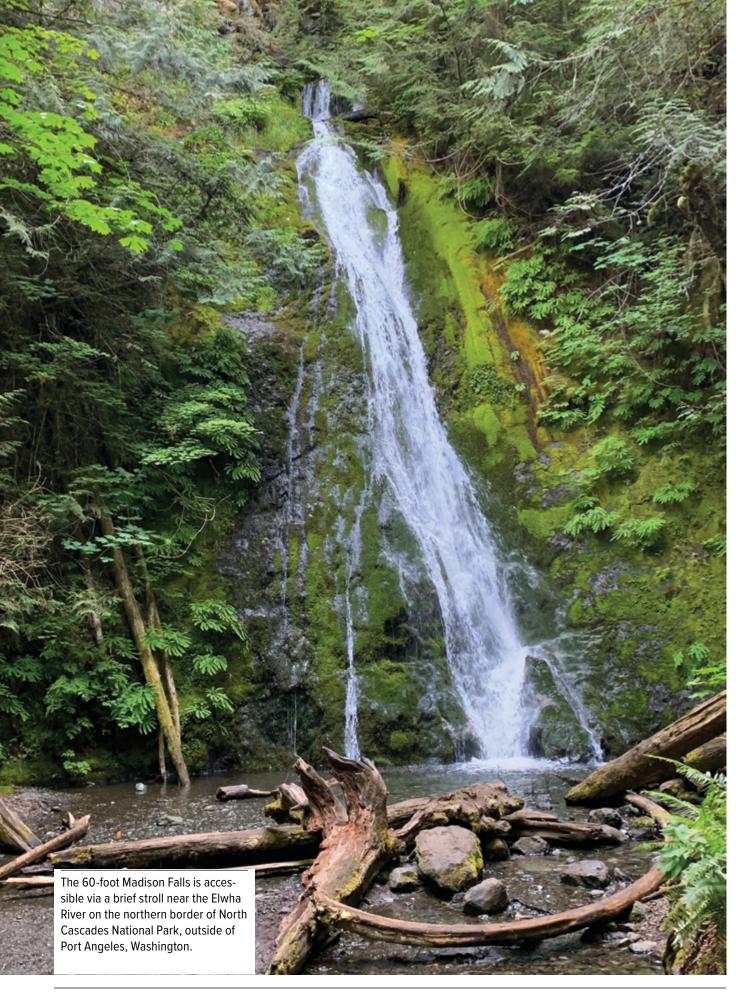
Popular airports for business and charter operations on Seattle's north side are Boeing Field-King Co. Int'l (KBFI) and Paine Field Int'l (KPAE), both Class D airports under the lateral limits of KSEA's Class Bravo. Bellingham Int'l (KBLI) Class D airspace is well north

"The densely forested mountains that make up North Cascades National Park are steep, jagged and teeming with glaciers, alpine lakes and lush valleys."

and less than 15 miles from the Canadian border. As one would expect from having "international" in their names, all have customs services available, wide/long runways and multiple Instrument Approach Procedure (IAP) options available to pilots. Popular and capable pilot-controlled airports in the same area include Arlington Municipal (KAWO) and Skagit Regional (KBVS). Each hosts a mixture of business and recreational aviation, offers standard FBO and fuel services, and has IAPs that



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can help bring instrument aircraft down through the low overcast that often blankets the area. All are easy launching points into the NPS lands east of Puget Sound.

The American Alps

The densely forested mountains that make up North Cascades National Park are steep, jagged and teeming with glaciers, alpine lakes and lush valleys. The proliferation of waterfalls gives the park its name. The landscape is often referred to as "The American Alps" (though, it should also be noted, the same nickname is often used in reference to the Rocky Mountain area within Montana's Glacier National Park, as well). The airports mentioned above range from 1 to 2.5 hours driving time from the western entrance of NCNP. The North Cascades Complex is much larger than the park itself and includes both the Ross Lake and Lake Chelan national recreation areas. Combined, nearly 685,000 acres of land are protected within the complex, from the Canadian border south to Lake Chelan. Fully 94% of that acreage makes up the Stephen Mather Wilderness (named for the first director of the NPS). Because the park is so expansive and mostly remote, the public facilities and best-known sites are mainly within the recreation areas. It is within them that visitors will find what limited access there is via paved roadways. Off the pavement, only a handful of dirt/gravel roads exist, leading mostly to trailheads. The 400+ miles of trails within the complex range from casual strolls giving a brief sample of the natural wonders of the area, to day hikes to waterfalls, lakes and overlooks, to some of the longest and best known hiking trails in North America, such as the Pacific Crest Trail and the Pacific Northwest National Scenic Trail.

NCNP's main road is North Cascades Highway, which traverses the park mainly east/west. Much of this road is generally closed November through April due to snow accumulation and, at times, conditions force its closure as early as October or can keep it closed well into May. So, the NCNP touring season is a short one (June-September most realistically, with May and October as bonus months most years). As a result, lodging is often heavily booked a year or more in advance. Plan accordingly.

Assuming an approach into the complex from one of the airports mentioned to the south and west, the most common route would be via Highway 20. Little



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"The scenic drives and short hikes to waterfalls and overlooks are beautiful ... However, for those up to the task, the true wonder of the area lies beyond."





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towns like Concrete, Rockport and Marblemount dot the route and contain quaint hotels/motels, restaurants and convenience stores. Just past the NCNP Visitor's Center at Newhalem Creek is the village of Newhalem. This company town is populated by employees of the hydroelectric company and government agencies which use a system of dams and hydroelectric plants to produce much of northwestern Washington's electrical power. Yet, it is also picturesque, welcoming to tourists and educational, too. A great little "watering hole" when entering or leaving the complex.

The vastness of the NCNP complex defies words and is certainly beyond the scope of a single article. The damming of the Skagit River and the lakes those dams have created is fascinating in both technical and biological terms. Human hands built the triple-dam system that created Ross Lake, Lake Diablo and Gorge Lake. The projects took a half-century and over \$250 million to complete. Today, that dam system provides up to 90% of the electricity used in Seattle. Nature's 300+ glaciers in the area, though rapidly receding and melting away, continue to shape and paint the lands and waters alike. The vibrant green of Lake Diablo, for example, is indeed natural. Suspended particles of rocks and minerals, pulverized by glacial movement and swept into glacial streams, eventually deposit into the lake. There, this slurry (known as glacial flour) refracts sunlight, reflecting light in the green wavelengths, while mostly absorbing the other color wavelengths. The scenic drives and short hikes to waterfalls and overlooks are beautiful, to say the least. However, for those up to the task, the true wonder of the area lies beyond. There, only your feet and a backpack can take you.



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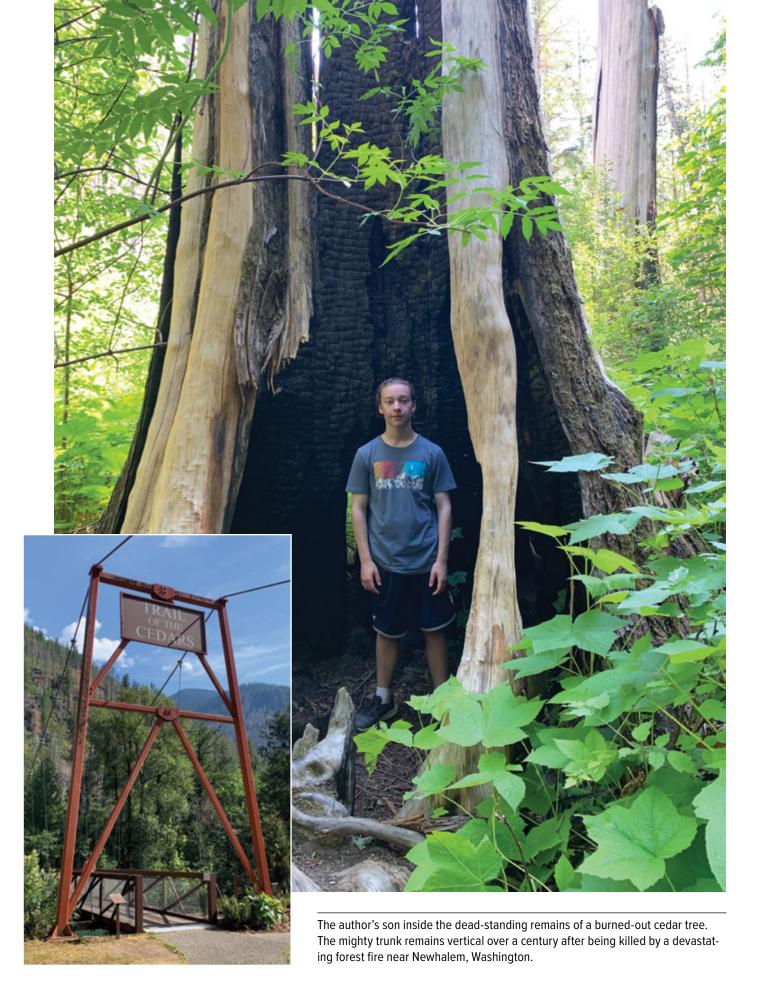


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The Blue Hole

On the west side of Puget Sound, a different but equally stunning national park awaits. If you choose to leave your aircraft east of the Sound and drive there, Washington State has an efficient and economical system of bridges and car/passenger ferries to help you island hop over. Such a trek opens many opportunities to enjoy the little communities and state and county parks along the way. You're also likely to see some of the flight activities to/from the very active Naval Air Station on Whidbey Island. However, as pilots, most of us would prefer to just reposition the aircraft to one of the many airports on the Olympic Peninsula.

The Olympics are well known for their copious annual rainfall. Much of the mountain range is a literal rainforest, receiving 100-150 inches of rain annually. There is also a phenomenon known as the Olympic Rain Shadow. Prevailing winds in the area come from the Pacific (west) side, and on this windward side, the air is forced up the mountainsides. As it rises, it cools and condenses, causing both clouds and precipitation to develop. On the leeward side, however, the air rapidly descends, warms and expands, which inhibits clouds and precipitation and a rain shadow develops. This "blue hole" is so

" ... ONP covers almost a million acres but is incredibly biodiverse. As a result, it looks and feels very different in various park sections."



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common on the north/northeast slope of the Olympics that the towns under it average less than 20 inches of rainfall per year (not to mention, prevailing VFR conditions). So, it should be no surprise that several airports reside there. Sequim Valley Airport (W28) and Port Angeles' Fairchild International (KCLM) are pilot-controlled fields. Both towns have ample lodging and transportation choices, but CLM is the larger and better equipped airport facility, including Jet-A fuel and rental car availability. Inbound pilots should use caution for the numerous private strips in the area, as well as the Port Angeles Coast Guard Air Station.

Touring in the Shadows

Much of the northern portions of Olympic National Park fall within the rain shadow, greatly increasing your chances of enjoying them in relatively good weather. Nonetheless, ONP's most popular season is similar to NCNP's. The popular Hurricane Ridge Visitor Center, high atop Hurricane Hill (elevation 5,757 feet) suffered a fire in early 2023 that closed both the facility and much of the Klahhane Ridge Road. Until those facilities are rebuilt and reopened, the ONP HQ and Visitor Center in Port Angeles should be your first stop for the latest info and park alerts.

Even bigger than NCNP, ONP covers almost a million acres but is incredibly biodiverse. As a result, it looks and feels very different in various park sections. Highway 101 runs along the northern forest sections and offers access to several side roads into the park's northern viewpoints, waterfalls, lakes and trailheads. Continuing west on Hwy 101 will take you across the peninsula and provide access into the other two ecosystems the park encompasses. The separate coastal section is only a few miles wide but over 60 miles long. There, one can wander from beach to beach all day, beachcombing, rock scrambling, hiking or just taking in the incredible views. The beaches in the middle sections get the most crowds, so if it's desolation you want, branch out north and south along the coastal sections.

There are two entrances into the temperate rainforest sections in the park's western (non-coastal) areas. The Hoh Rain Forest and Quinault Rain Forest are vastly different from the dryer forest and sub-alpine areas farther north and east. Touring there puts the tourist in the shadows, humbled beneath the canopy of massive trees and dense blankets of moss. The plant and animal life in the rainforests is simply incredible to behold and the NPS has created a great way to see it via accessible loop trails and scenic drives. Specific





Huge trees blanketed with think moss within North Cascades National Park's Hoh Rain Forest. It's a rare treat to be able to take it in on a dry day.

examples of native trees that have survived and thrived in these virgin forests for hundreds (even thousands) of years are often noted on the park maps and trail guides. Outside of the coastal redwoods and giant sequoias, ONP protects some of the biggest trees on the continent. In fact, ONP's rainforest sections contain the largest known examples of at least a half-dozen species of spruce and fir trees in the U.S. and, in some cases, the world. Many stand in the 200-foot-tall range, while one 13-foot diameter Douglas fir towers over 300 feet.

If your time is limited and you've flown into the northern peninsula, the Hoh Rain Forest is closest and will not disappoint. However, if your flight itinerary has you going to Bowerman Field (KHQM), near Hoquiam, on the peninsula's southwest coast, you'll be nicely situated for a day trip to the Quinault Rain Forest area. There are also a number of airports on the south and east sides of ONP, but they are poorly situated for terrestrial tourism. There are few roads into the park's south and east sides and those areas are mostly the domain of hardy hikers doing full-day or even multiday thorough-hikes.

Circle to Land

Seattle is relatively centrally located between NCNP and ONP, with Puget Sound bisecting the area. Much has been written about the wide variety of airports on and around the San Juan Islands. Indeed, there are many

and flying into them all is an adventure unto itself. But many are unlikely destinations for a King Air. The larger airports mentioned earlier, however, could all attract King Air traffic for business, charter or personal reasons. From those places, day trips or multiday explorations into those NPS areas are both feasible and rewarding.

In the next issue, we'll continue the circular tour around Seattle, with tips for visiting Mount Saint Helen's National Volcanic Monument, Mount Rainier National Park and the airports near them.

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Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI, & IGI and Platinum CSIP. In 34 years of flying, he has logged over 21,000 hours total, over 5,800 hours of instruction-given, and over 2,500 hours in various King Airs and the BE-1900D. As owner of Progressive Aviation Services, LLC (www.progaviation.com), he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he is also a Boeing 737-series Captain for an international airline, holds eight turbine aircraft type ratings, and has flown over 130 aircraft types. Matt is one of less than 15 instructors in the world to have earned the Master CFI designation for 11 consecutive two-year terms. He can be reached at: matt@progaviation.com or 414-339-4990.



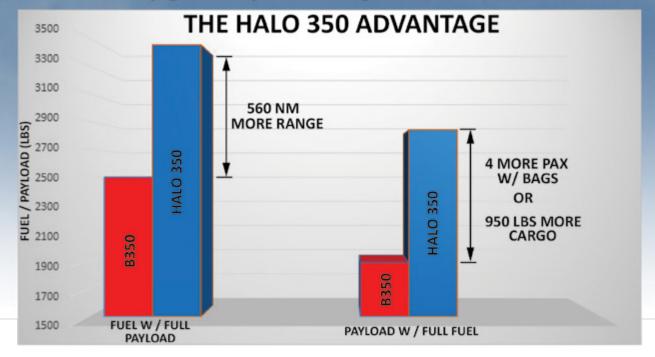


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Who is Covered?

by Kyle White

any aircraft owners are entrepreneurial by nature, looking for new opportunities, ideas and efficient ways to deploy capital and maximize their return. This mindset creates new and more affordable ways to fly the open sky without having 150 strangers sitting next to you.

A common avenue to making aircraft ownership more affordable is to be in a partnership with one or more people. This is not a new concept, but the structure of partnerships have evolved. The Federal Aviation Administration (FAA) is paying particular attention to non-FAA Part 135 flights that are carrying passengers who are not part owners of the aircraft. If this is applicable to you, regulatory compliance should be high on your checklist. It is important to consider how the insurance is structured, taking into account whether you own the airplane in whole, in part or are merely "borrowing it." All of these variables determine who is covered under the insurance policy.

In most cases, the "off the shelf" solution for an aircraft insurance policy is to be in the name of the person or entity shown on the FAA registry. However, to appropriately structure the policy specific to the airplane's use, you must consider who has an insurable interest. If metal is bent or bones are broken and the policy is triggered, you want to know how the policy will respond. How it responds and on who's behalf, should be defined within your specific, and hopefully customized, King Air insurance policy.

We have all seen the term "Named Insured" on our insurance policy. This is usually the registered owner of the aircraft, but it could be the operating entity or both.

The named insured has an insurable interest because they have a financial interest in the aircraft, as well as a liability exposure associated with the responsibility of "owning, operating and maintaining" the aircraft. That language is stated in the first paragraph of your insurance policy under "Who is Covered."

Policy basic definition: Who is Covered

- Any person who is a passenger with your permission.
- Any person or organization that uses or is legally responsible for your aircraft. But you must have given your permission for this use.
- Any of your employees who are performing work for you, regardless of the type of work.

To be clear, the policy goes on to state "Who is Not Covered":

- Any person or organization that manufactures or sells aircraft, aircraft engines or accessories, or that runs an aircraft repair shop, aerial applicating service, airport, hangar, aircraft sales agency, pilot training center, commercial flying or commuter air service or flying school, or any individual or organization providing pilot services or flight instruction, if the loss arises from these activities.
- Any officer, director or employee who, while in the course of his or her work, injures or kills another employee, officer or director who works for the same employer.
- Any person or organization with respect to bodily injury to you, or if you are a partnership, to any partner thereof.

If you are sitting in the pilot lounge right now reading this, you may be thinking, "Well, I don't own the aircraft, but I operate it on behalf of the owner, am I covered?"

The answer to your question? It depends. If you are an employee of the "Named Insured," the answer is yes. If you are an independent contractor who is paid as a 1099, the answer could be no. Your boss has coverage, but you may not.

In addition to the pilot(s) having an insurable interest from a liability standpoint, so do the maintenance technicians. The same answer applies: W2 compensation provides you with liability protection under the policy; 1099 compensation does not guarantee you coverage.

While reviewing the "Who is Not Covered" section above, your attention may have caught on the second bullet point regarding an employee who injures a fellow employee. This is a very valid concern and an example of why "off the shelf policies" are not the best value. Review your policy for an endorsement titled "Fellow Employee Exclusion Deletion Amendment." If included, this endorsement removes that specific bullet point exclusion.

If you are compensated via 1099 instead of W2, consider consulting with an aviation attorney for a pilot services agreement. The agreement can be put on file with the insurance company and extend coverage to protect you with respect to you operating the aircraft on behalf of the "Named Insured." Setting this up can be complicated, but is worth putting in place to protect yourself. This agreement will delve into terms you may have heard over the years, such as "Named Insured," "Additional Insured" and the rare use of the term in the aviation industry, "Additional Named Insured." While similar sounding, each term is unique and plays an important part in setting up your insurance policy and coverage.

The "Named Insured" is frequently just a "shell" or "holding" company that the aircraft is registered in. Subsequently, there may be a "Holding Company Exclusion Amendment." This means the policy will not pay for a claim for bodily injury, including death, to any officer, director, employee, owner, stockholder or member of the corporation. Essentially meaning, you can't sue yourself for bodily injury.

There are other ramifications of just having the holding company as the "Named Insured." You've really limited the "Who is Covered" under the policy. Multiple solutions are available to address this. One option is to extend the "Named Insured" section to include your other operating entities that can be tied to cashflow between them with respect to aircraft utilization. Or you can make the parent company the "Named Insured," in addition to the holding company, and endorse the policy to have the holding company of the airplane as the "sole loss payee" for hull claims. There are a variety of ways to structure the "Named Insured" section. There may also be another endorsement for consideration in a complex environment with multiple sister companies or partners. Every carrier has a different name for it, but essentially what you want is for the policy to extend liability coverage to your wholly owned subsidiaries, including their subsidiaries and any other company that you control or actively manage. If you ask for "broad form Named Insured" language, your broker should understand what you are trying to accomplish.

If you are not tied to the aircraft as an owner or employee of the aircraft operator, but are dry leasing or chartering the aircraft, you are considered an "Additional Insured." You have an insurable interest in the aircraft from a liability standpoint. Under a third party dry lease as a lessee, you have significantly more exposure and responsibility than if you were to simply charter the aircraft.

As a lessee, you are in a contract that gives you operational control and you have acknowledged you believe the aircraft is in airworthy condition, along with many other commitments. It is crucial that a formal contract/lease is signed and put on file with the insurance company so the insurance carrier can provide you with a written endorsement and certificate stating the lessee is covered under the aircraft policy. This could extend into an "Additional Named Insured" scenario as well, as you do not want to just be covered with "respects to operations of the Named Insured." You want to ensure the policy will extend liability coverage to you in the same manner it would if you owned the aircraft. The hull portion of the policy would still solely benefit the aircraft owner by adding the "loss payee" endorsement as stated earlier.

For FAA Part 135 charter certificate holders, you may have clients request a certificate of insurance naming them as an "Additional Insured" under your policy. This is to provide them coverage when being sued as a result of your (the operator's) negligence. While it is possible the definition of the policy may automatically extend coverage to them under the "any person who is

a passenger with your permission" bullet point, it gives an added layer of coverage verification and confirms to the customer you have "commercial use" approval by the insurance company. It will also disclose how much liability coverage the aircraft operator maintains.

The King Air family of aircraft is one of the most utilitarian turbine aircraft flying today. Because of this, the ownership profile for the King Air is very diverse. Every owner situation is unique and your insurance policy should be unique to you as well. In the event of a claim, everyone associated with that King Air is at risk of being sued, whether you were negligent or not. If your policy is set up correctly, it will pay for your cost of legal defense. While this article has focused on "who is covered," it is only part of the equation. The "use," "conditions," and "exclusions" portions of the policy are also important factors in determining coverage validation.

For a more complete picture of how to structure your policy and ensure adequate coverage, refer to the article "It's Covered Unless It Isn't" in the September 2023 issue of King Air magazine.

Kyle P. White is an aviation insurance specialist for a global insurance brokerage company. He has professionally flown King Air 90s and B200s and holds an ATP and multi-engine instrument instructor license. You can reach Kyle at *kpwhite816@gmail.com*.





Cancer Patients Fly Free

Can You Spare a Seat?

Corporate Angel Network (CAN) is a 501(c)(3) nonprofit organization whose mission is to provide cancer patients with free transportation to treatment centers throughout the United States.

CAN works closely with over 500 of America's top corporations, including half of the Fortune 100, to match empty seats with patient flights. Thanks to the generous support of these companies, CAN has coordinated more than 67,000 flights since its founding in 1981.

Contact CAN to learn more about registering a cancer patient or to donate an empty seat on an aircraft.

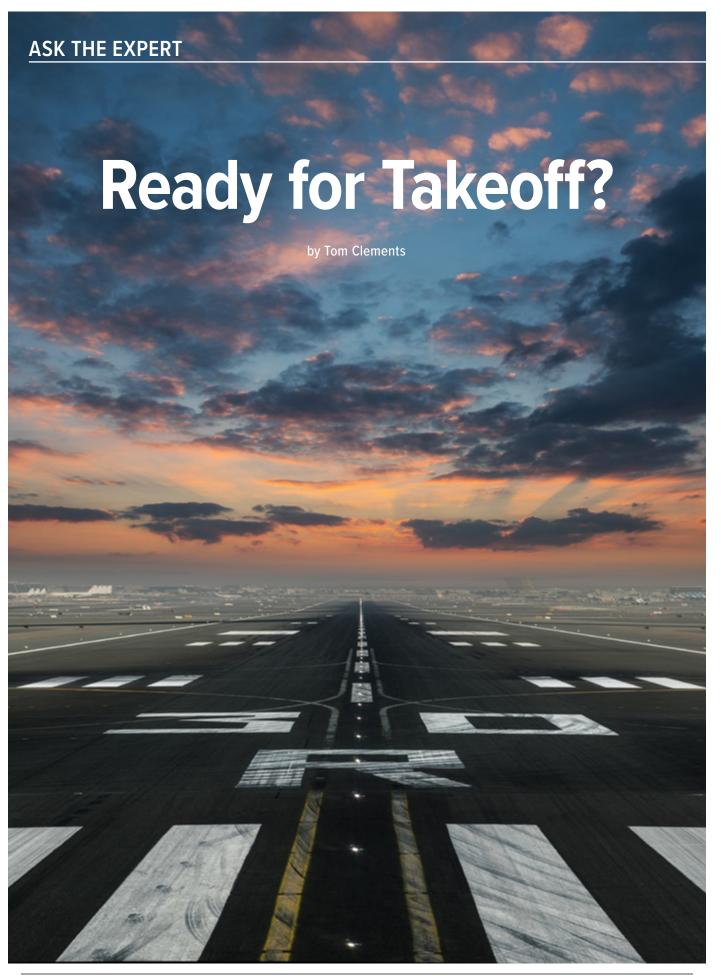
corpangeInetwork.org





It's wonderful that organizations like the Corporate Angel Network are able to help connect those most in need of flights to those who are flying.

-Henry Maier, President and CEO, FedEx Ground



here you are, just starting to roll from the "hold short" line onto the active runway to begin the takeoff for which you have just been cleared. Are you ready for takeoff?

"Of course I am, Tom! I've completed the proper checklists and given a briefing to myself since I am flying single pilot today. I am set to go!" Yes, of course you are "ready to commit aviation." Enjoy a safe flight!

The rather "canned" briefing that most of us have learned quite well is almost always addressing an engine abnormality – failure, fire, other problem – and how we would react to that depending on the indicated airspeed. This is well and good and what is expected. Is it sufficient? In 95% of the cases, I think it is. The intent of this article is to jog your memory on some of the other abnormalities that can take place and to review some ideas of the optimal way of handling them.

At Takeoff

Window Opening: In the King Air, the only windows that open are the triangular-shaped "DV" (Direct Vision) windows located on each side of the cockpit just in front

of the "D-shaped" window beside each pilot. The latch that secures these windows closed is usually quite easy to manipulate and rarely fails to operate properly. Hence, the possibility of a window opening in a King Air on the takeoff roll is remote. But if it does indeed happen? Don't do anything in a rushed manner but as workload permits close and latch it properly. A little extra noise is the only difference this malfunction causes.

Do you realize that in flight, cabin air *exits* this opening but does not enter? The acceleration of the free airstream around the corner of the windshield creates an area of lower pressure outside of the cockpit in that location. Opening this window is listed in some POH's as a way to help eliminate smoke after dumping the pressurization.

Have you ever tried to open the DV window in cruise while pressurized? Try all you want, but you won't be able to do it. That triangular-shaped window is roughly 10 inches per side. If it were a square and not a triangle,



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is an online meeting place for pilots and other volunteers

who help to transport rescue animals by air. The mission of the site is to provide a user-friendly communication venue between those that rescue, shelter, and foster animals; and pilots and plane owners willing to assist with the transportation of these animals.

A general aviation transport requires just one pilot volunteer and is far more efficient and dependable than time-consuming ground transportation for these animals who are often in danger of euthanization. Volunteer pilots retain complete authority of their planning and flights, and can give as much or as little time as they like.

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No bothersome paperwork required! If you love to fly, and you love animals, please join us now! It's easy, it's fun, and it's extremely rewarding. Joining is easy and takes just a minute of your time.

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it would equate to 100 square inches. Being that it is a triangle, it is about 50 square inches. Let's see ... 50 square inches at 5.0 psi differential pressure equates to 250 pounds of force holding that window closed! You'll need to be at almost 0 psid before the gum rapper can be discarded through that opening!

Door Opening: Unlike the window, the cabin door going open in King Airs is, sadly, not uncommon at all. A strong pet peeve of mine is hearing, while seated in the cockpit, the cabin door being closed after the last passenger is loaded. Damn! Don't close it that way! When you haul the door up far enough to grab the handle, turn it fully open, fully CCW (counterclockwise). This withdraws the latches and hooks into the door far enough so they cannot slam-bang against the fuselage door frame. Now gently pull the door in as far as it will go and then rotate the handle fully clockwise. See? Wasn't that quiet and pleasant? Didn't you prevent some wear and tear on the door and its frame? Now go ahead and do your normal six or eight checks to verify the door is completely and properly closed before walking forward.

(OK, here are the checks you should make: 1. Handle won't rotate in the open CCW position since the button is not being depressed. 2., 3., 4. and 5. The green stripe can be viewed in the port above each latch bolt. 6. Lift the middle doorstep up against its spring and verify that the red arm is engaging the plunger properly as the little diagram there shows. Push the button to illuminate the inspection light so this is all easier to see. 7. and 8. Only for the 300-series, Beech also provides viewing ports and a light to inspect the two J-hook latches on top of the closed door. Now, finally, head for the cockpit and, later, confirm that no warning annunciator for the door is illuminated.)

Based on the number of King Air doors that have opened in flight, I believe these door checks and proper operation are very important indeed. The open doors have ranged from one that popped open on takeoff rotation – the airplane remained in the pattern, landed, inspected the door for any damage (none was found) closed the door properly, and continued on the flight - and many successive flights with no problems. At the other extreme, doors have opened in flight and totally departed the airplane, taking the door cable and hydraulic snubber with them. Perhaps the worst case of which I know involved a straight 100 model in which the door detached but the hand railing/cable remained attached. The left aft fuselage was beaten and dented very badly by the door flopping at the end of its cable before the plane landed successfully.

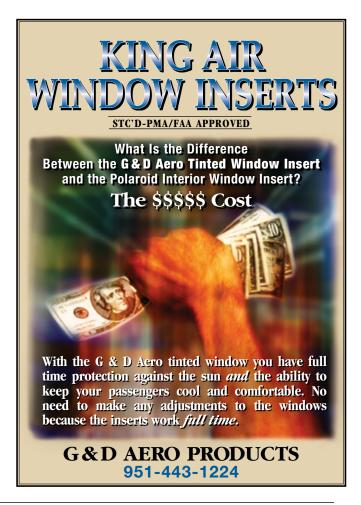
Brake Dragging: We hope a dragging brake would be caught before the takeoff roll began. It certainly could be difficult, if not impossible, to differentiate a dragging brake from some other steering problem. Definitely time to abort and correct the problem(s).

Blown Tire: Man, you're really having a bad day, aren't you?! Guess what? A single flat main tire on any King

Air with dual mains will probably never be observed until the next preflight. "Where did that hole in the outboard's tread come from?!" On the other hand, a 90-series model with a single main on each side ... oh yeah, that will become immediately noticeable. Is there still room to easily abort? If so, that is of course the wise course of action. On the other hand, if available distance is "iffy" it might be better to continue to fly and head for an airport with a long and wide runway and with crash-equipment standing by.

Steering Failure, Loss of Normal Directional Control: As in most Beechcrafts, the King Air series can maneuver quite well on the ground with the nosewheel steering system totally disconnected. Differential braking combined with a free-swiveling nose wheel is quite manageable.

But what if the nose wheel is not free to swivel? This can be the result of the nose wheel steering shock link assembly no longer being "assembled." In that case, the nose wheel may end up with a "neutral" position that is many degrees away from the proper, straight ahead position. As stated before, speed is the factor that will determine if this is an easily handled, early abort or if it's going to be a hair-raising race to liftoff speed. The good news is that if the nose wheel steering worked normally on the way to the runway, chances are good



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that normal operation will continue during the takeoff roll.

Inoperative Airspeed Indicator (ASI): Ah, the old "Forgot the pitot tube cover again!" I certainly teach and advocate an early "airspeed alive" check no later than 60 KIAS. It's easy to abort at that low speed if one side's indicator is not working.

On the other hand, if the opposite side is functioning normally then it depends on how much airspeed you have when the discrepancy is noted. I know of a case involving a King Air model 300 in California that went through an airport boundary fence, hit a car and badly hurt the driver, all because the pilot's side ASI was

blocked, yet the co-pilot's indicator was functioning normally.

Collision with an Animal: As in

Collision with an Animal: As in so many of the situations we are discussing, the airspeed that exists when the abnormality occurs plays a huge factor. If unknown damage from the deer, elk or moose involves a wing or propeller it is probably prudent to abort even near "decision speed."

Low Power: Heck, a PT6A-20-powered member of the 90-series, on a hot day in the mountains, less than full power is expected and does not fall into the abnormal/emergency category at all! But what about when conditions do not mandate reduced power, yet one engine is noticeably "weak?" An abort is the obvious and correct choice since the airspeed should be quite low when the discrepancy is observed.

This is why I teach – and it's so very important! – that takeoff power application be a structured process and that takeoff torque be reached early, no later than 60 knots IAS. What is the "structured process?" For the majority of King Airs with the vertical stack of engine instruments, put your attention on the bottom of the stack first. Did a missing dipstick (Damn! I hate it when the phone rings while I'm checking the engine oil!) cause a lot of oil to be blown out? Unless oil temp and pressure are satisfactory, why even begin power application?

Next, bring your attention up to the propeller tachometers. To avoid unnecessary ITT spikes, advance the power levers quite slowly until you observe 1,500 RPM. If one side accelerates at a noticeably slower or faster rate than the other side – a very common occurrence - then split the power levers as necessary to match speeds. In almost all King Airs, once 1,500 RPM is attained, the engine response rate will be much faster and thereby lead to much lower ITT spikes. For newcomers, holding the brakes until you've matched power at 1,500 RPM is a great learning technique but will quickly become unnecessary on longer runways. In fact, achieving full power before brake

"As in so many of the situations we are discussing, the airspeed that exists when the abnormality occurs plays a huge factor."





release is the proper technique for all pilots when the runway is truly limited.

So now we are rolling with our attention still on the prop gauges that are now showing about 1,500 RPM. As fast as reasonably possible advance the power levers, splitting them as necessary to match propeller speeds, until you reach takeoff propeller speed. Does the RPM stabilize as it should? If so, you have just verified that the primary propeller governors are operating properly. If you see the unlikely situation of one side stabilizing about 4% above redline it's time to abort since that side is being controlled now by its overspeed governor. Finally, now is the time to rapidly advance the power until the target takeoff torque – Minimum Takeoff Power – is reached. At lower-elevation airports on cooler days this will always be redline, maximum allowable torque. At higher elevations and hotter days, that's when the minimum takeoff power chart should have been consulted to provide you with a target torque value. Not only is this the torque that the takeoff performance data has been based upon but, if you cannot achieve it because of an ITT restraint, you have an engine or indication problem.

Now some of you will find this next statement hard to believe, but here goes: Even adding power in the manner just described, takeoff torque should be set by no later than 60 KIAS. It's easy with a little training and practice. If you are still having trouble adding power

in this manner, then do what the charts say: Hold the brakes until takeoff power is attained.

Back to the title of this section "Low Power." If one side has a problem in reaching the target power, it is very easy to abort the takeoff since airspeed is only about 60 knots or even less.

Crosswind Lack of Control: This is a weird one and quite unlikely. What does the POH say about a crosswind limitation? Nothing! *Demonstrated* crosswind component? Yes. *Limitation*? No!

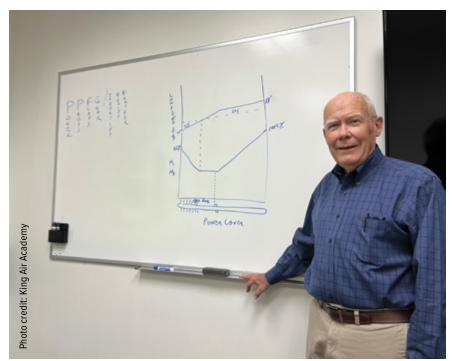
So there you are, departing the gravel strip in the backcountry of Alaska where you picked up the boss and his friends from their weeklong hunting/fishing adventure. Dang! That wind sure is strong and about 90 degrees to the runway! Willing to risk it?

There's no easy "correct" answer here. Use all of the crosswind techniques you know but if the airplane starts drifting to the downwind side of the runway even with all of the correct inputs, then I hope the runway is wide enough to allow you to stop before hitting something hard and fixed beside the runway. Wind usually dies down near sunset, right?

Runway Incursion: Dang! I can't believe that 777 is crossing our runway! Can you safely stop well short of the airliner? Can you with 100% certainty clear the 777's fuselage or tail if you continue? If neither



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Both left and right power levers have microswitches in the power quadrant that require both levers to be up near the 90% N1 position or above before the system can operate.

of those options is a slam dunk, you're probably better off aborting and steering around it, if possible. The kinetic energy needed to be dissipated in a collision at 30 knots is only about 11% of that needed to be dissipated at 90 knots.

Visibility Problem: You've just rolled into a dense fog bank sitting on the last half of the runway. It's hard to see anything now, even the centerline stripe. Are you close to VR? Are you relatively comfortable with an IFR departure? If the answer to either of these questions is "No," then staying on the runway and aborting the takeoff is likely the better choice.

Bird Strike: Was it a Condor or a Wren? Has any obvious airframe or propeller damage been inflicted? The answer to these questions will determine the best course of action.

After Liftoff

Now let's discuss some possibilities after we have rotated and lifted off at the proper speeds.

Control Reversal: What the heck?! Why are we rolling left instead of right when I turned the

wheel to pick up the left low engine side?! Folks, historically this leads to disaster and death. Please, please, please never conduct your before takeoff "Controls" check without truly verifying that all the control surfaces that you can see are moving correctly! Ailerons are easy to examine. Your thumb(s) point to the raised aileron, right? Did your primary flight instructor teach you this little trick? When you rotate the wheel to the left, CCW, the left aileron should go up to force the left wing down and vice versa on the right side. So your thumb(s) on the wheel should always end up pointing to a raised aileron.

Rudders and elevators? Nearly impossible to check unless you have an outside helper. However, on the conventional tail members of the 90-series you can actually observe the elevator move by looking through the last cabin window on the opposite side from which you are sitting.

Asymmetrical Engine Power: Is it an actual engine failure? How do you know? More importantly, why do you care? If you have rotated and are holding the normal +10-degree

pitch attitude, if you've "stepped on the heading" and it's taking some aggressive foot force to keep the heading bug under the HSI's lubber line, and if your indicated airspeed is near V2, then try to relax. You're performing well at this difficult time. Remember to move the landing gear handle to its "up" position then wait until reaching 400 feet AGL before continuing the Engine Failure checklist.

PPFGIVF – Power, Props, Flaps, Gear, Identify, Verify, Feather. I know you've had that mantra drilled into your memory bank more than once. When you checked the airspeed and it was near V2 and you weren't requiring an inordinate amount of force to keep the heading bug centered, then it's almost guaranteed that autofeather has done its job and the drag of a windmilling propeller has been automatically addressed and corrected.

But the dastardly deed of Power Lever Migration (PLM) won't leave you with the situation we've described here. Since the retardation of *either* power lever turns off the autofeather system on *both* sides, we will be left with a windmilling propeller, lots of drag and the resultant lack of performance. Airspeed will rapidly deteriorate to something below V2 and climb rate will suffer immensely. We will rapidly be approaching the deadly VMC roll when controllability is lost.

By the way, realize that turning off autofeather when a power lever moves aft is not due to any engine power change. It's because both left and right power levers have microswitches in the power quadrant that require both levers to be up near the 90% N1 position or above before the system can operate. The "autofeather test" switch's purpose is to bypass these switches and permit the system to operate even when a power lever is retarded.

PLM is a killer! Check those friction knobs carefully as the checklist directs. A relatively new procedure I am now teaching and advocating is to quickly release the power levers after takeoff torque has

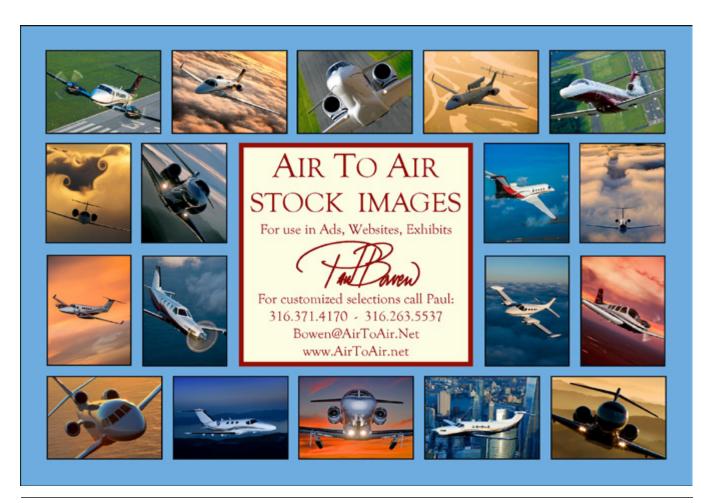
been set and verify that neither side's lever moves. Just a brief relaxing of the right-hand's grip and lifting the hand's palm maybe a half-inch or so is all we are talking about here. Did one or both of the levers start to migrate aft? If so, then two choices exist depending on how much runway remains. Choice One is to abort the takeoff roll, taxi back, tighten the friction more and then try again. Choice Two is to tighten the friction some more and continue. Having a co-pilot do the friction adjustment is really the only way this can be safely accomplished. Without a third hand to help it's comical and perhaps deadly for just two hands to do what's required while also completing the takeoff itself.

It will certainly be a painful, heart-wrenching decision to lower the nose to increase airspeed back up to V2 if the runway or the farm field is just a few feet below you. But friends, you and your passengers' chance of surviving that "landing" is immensely greater than surviving the loss-of-control roll that you will face if you don't push the wheel forward as speed drops well below V2.

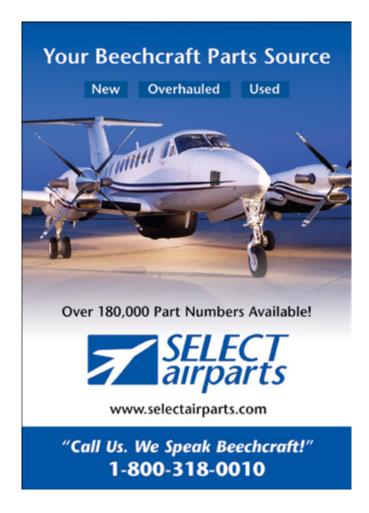
If the retardation of one or both power levers due to PLM is observed by the pilot, it is of course easily corrected by pushing the misbehaving lever(s) back to where it/they should be. But when the movement goes unnoticed (Because it's nighttime? Concentrating on the flight instruments? Distracted by a radio call?), that's when disaster lurks nearby.

Retracting the gear on takeoff – especially when dealing with unexpected power asymmetry – is not nearly as critical as making sure both power levers are asking for takeoff power, that neither has slipped back. All parasite drag – whether a windmilling propeller, an antenna, flap panels, gear legs – depends on velocity through the air squared or multiplied by itself. The drag of the landing gear at 160 knots is four times as great as the drag at 80 knots (160 x 160 = 25,600, 80 x 80 = 6,400 and 6,400 x 4 = 25,600).

That's a reason why our power loss mantra begins not with gear retraction but rather with checking power. Props comes next. Both prop levers are full forward, right? Next, flaps. If approach flaps were used on takeoff they should not be retracted until 400 feet AGL and Vyse are both attained and the correct, lower-than-blueline V2 airspeed should be maintained until leveling off at 400 feet. Next comes gear and now is the time to retract them. Now continue to "Identity, Verify and Feather" and for the myriad of you blessed with autofeather, it will be easy to identify and verify since the prop will already be stopped! But carefully go ahead and move the propeller lever into the feather detent yourself. That step guarantees that it won't unfeather itself by accident later after the autofeather switch is turned off and also supports the habit pattern you will need to use when flying a multiengine airplane that does not have autofeather.



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Attempting the "Impossible Turn": Turning back to land on the departure runway is a tempting option when the engine of a single-engine airplane quits on initial climb. Many times this attempt has ended in disaster and that's why it goes by the name of the *Impossible* Turn. In a King Air, don't even think about it. Get to pattern altitude, complete the checklist, decide where you want to land – it may not be at the departure airport but rather one with CFR (Crash, Fire, Rescue) capability – and proceed accordingly.

Controllability Issues: My close friend, Beechcraft factory instructor and demo pilot, David Yount, who instructed in King Airs and Dukes for my company Flight Review for many years (and who died much too early due to cancer), told of a winter departure from Beech Field in the factory's model 200 demonstrator back in the 1970s. He found, on initial climbout that his pitch stability was almost non-existent. With much effort, he returned to the field and made a successful approach and landing. This taught all of us factory pilots how critical it is to verify that all snow and ice has been removed from the impossible-to-see top of the T-tail's horizontal stabilizer and elevators. A tall ladder or a convenient balcony will be needed!

Here's a question for you: The next time you conduct your "Before Takeoff" briefing, will you cover all of the abnormalities I have presented here? Golly, I hope not! You're going to deplete your fuel supply taking the time to cover all of the possibilities!

Instead, I hope this article can serve to add more depth to your knowledge of what can and has occurred during the takeoff and departure process. Discuss it with the other pilot(s) with whom you fly. Maybe review it with the entire flight department during the monthly safety meeting (if you have one). Present it to your recurrent training instructor and see if he/she could perhaps incorporate a couple of these scenarios in a simulator session.

Most importantly, be reminded of some of the weird events that can happen and try to be prepared as best you can. Y'all be careful out there, ya hear?!

King Air expert Tom Clements has been flying and instructing in King Airs for over 50 years and is the author of "The King Air Book" and "The King Air Book II." He is a Gold Seal CFI and has over 23,000 total hours with more than 15,000 in King Airs. For information on ordering his books, contact Tom direct at *twcaz@msn.com*. Tom is actively mentoring the instructors at King Air Academy in Phoenix.

If you have a question you'd like Tom to answer, please send it to Editor Kim Blonigen at *editor@blonigen.net*.

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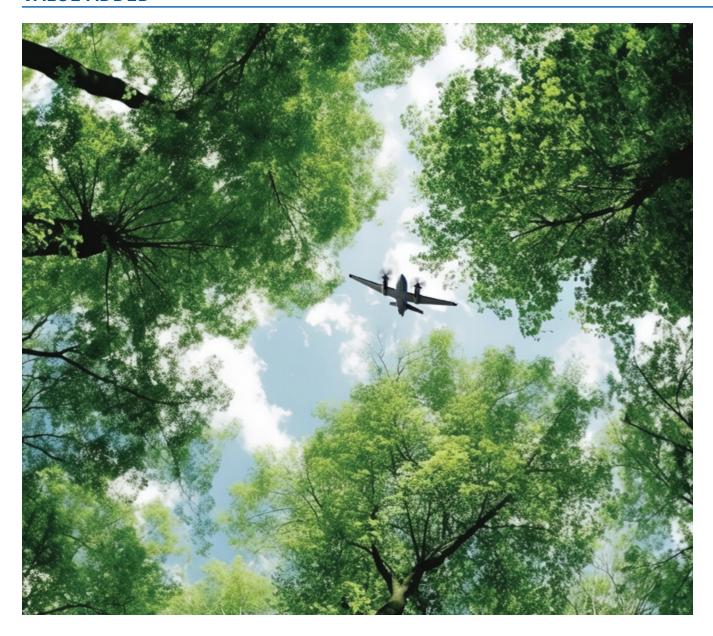


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Textron Aviation announces new SustainableAdvantage carbon offset program for owners

In mid-December Textron Aviation announced a new ProAdvantage program, SustainableAdvantage, to provide owners with an additional option for reducing their carbon dioxide emissions from operating aircraft. In collaboration with 4AIR, the program is set to launch this month and is available to eligible customers who own and operate Beecheraft, Cessna and Hawker turbine aircraft worldwide.

Customers receive factory-direct support, maintenance and modifications by Textron Aviation Inc. through its global network of service and part centers, mobile service units and 24/7 1CALL AOG support.

"Owners have increasingly become interested in solutions that mitigate the carbon footprint of operating their aircraft," said Brad White, senior vice president, Global Parts and Programs, Textron Aviation. "SustainableAdvantage provides them the opportunity to have a seamless option to offset their carbon emissions through a Textron Aviation approved program and supplier."

Textron Aviation will administer SustainableAdvantage as part of its easy-to-use array of ProAdvantage programs and connect owners to 4AIR – the first company to offer comprehensive sustainability solutions for business aviation. SustainableAdvantage will offer owners the option to offset their aircraft emissions footprint with 4AIR's Bronze Level. Carbon offsets reduce emissions elsewhere which can be claimed against the carbon footprint from operating aircraft.

"Textron Aviation will administer
SustainableAdvantage as part
of its easy-to-use array of
ProAdvantage programs and
connect owners to 4AIR ... "

"Our relationship with Textron Aviation acknowledges the many strides we have made in the industry to make sustainability more accessible," said Nancy Bsales, chief operating officer, 4AIR. "We are excited to provide Cessna, Beechcraft and Hawker owners with sustainable solutions that address and meet their environmental commitments and goals."

4AIR will provide owners who choose to join SustainableAdvantage a personalized, annual report that will document offset purchases. Additionally, 4AIR offers monitoring and compliance reporting requirements for the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and the European Union, French and United Kingdom Emissions Trading System (ETS) as well as other ESG reporting requirements.

The SustainableAdvantage portfolio currently managed by 4AIR supports four projects around the globe:

- Rainier Gateway Forestry Project
- Cookstove Project
- Bundled Solar
- Solar Energy Renewable Power by Adani

Sustainability at Textron Aviation

Textron Aviation is committed to environmental sustainability and natural resource conservation and supports the Business Aviation Commitment on Climate Change. As part of Textron Inc., Textron Aviation established enterprise-wide five-year goals to reduce greenhouse gas emissions by 20%, and reduce energy

consumption, water use and waste generation by 10% by the end of 2025. Additionally, nearly all the company's electricity needs in Kansas are powered by renewable wind energy.

Robust investments in Textron Aviation's products and facilities encourage sustainability in its designs and operations. The Beechcraft Denali and Cessna Citation Ascend highlight the company's dedication to reducing emissions and improving efficiency through its new aircraft projects. Customers can take delivery of their aircraft using sustainable aviation fuel (SAF) and they can also refuel with it at Textron Aviation's service center in Wichita, Kansas.

The company is actively supporting the development of sustainable propulsion solutions, such as hydrogen electric and hybrid electric. Its global service network received recertification from the National Air Transportation Association (NATA) as a Green Aviation Business and by the National Business Aviation Association (NBAA) for the increased sustainability efforts of its ground support.

NBAA Regional Forum at Miami-Opa locka (OPF) Jan. 31

NBAA will be hosting its first regional forum of the year Jan. 31, bringing together current and prospective business aircraft owners, operators, manufacturers, customers and other industry personnel for a one-day event filled with networking and business development opportunities.

The event will feature aircraft, education and exhibits:

- A side-by-side lineup of the world's most cuttingedge business aircraft, all in one venue at the 2024 Regional Forum outdoor display.
- Valuable educational sessions featuring topics surrounding the day-to-day operational issues facing the business aviation industry.
- Over 150 exhibits of business aviation products and services are expected offering a great opportunity to network with your peers and fellow business aviation professionals.

Students are invited to attend the regional forum at no cost to them. Please share this information and opportunity with any graduating college students interested in working in business aviation.

Go to nbaa.org/events/2024-nbaa-miami-opa-locka-regional-forum/ for complete details for this forum.

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to Left: Chris Crisman/TNC/LightHawk; Right: Lincoln Athas/WCC/LightHawk









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