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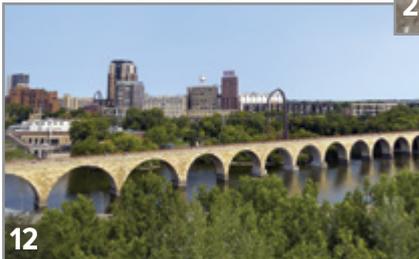
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From Barnstorming to Ballooning and Flying Beechcrafts

Aviation is in the DNA of the Stewart family

Interview by MeLinda Schnyder

Jeff Stewart is the third generation of his family to run Blue Star Gas, and he's the third generation to be a pilot. He can be credited, though, with being the first to build the family's propane business around aviation.

Using business aviation has propelled Blue Star Gas from 38 employees with five locations when he joined the family business in 1996 to 200 employees and 16 locations today. The company is based in Santa Rosa, California, and operates a fleet of four aircraft: 1990 Beechcraft King Air B200, 1979 King Air F90, 1956 Cessna 180 and 1969 Cessna 206. Stewart said they considered themselves a Cessna family until realizing in 2018 the versatility and dispatch reliability the King Airs could bring to their operations.



Chief Pilot Byron Barnes (left) with Jeff and the company's two King Air aircraft. Together, they share piloting duties of the combined 900 hours the King Airs fly per year.



Blue Star Gas uses more than just aircraft in their business. They also own a hot air balloon that they use for brand recognition in their home office market of Sonoma County.





After purchasing the King Air F90, 5-blade MT props and an all Garmin panel, including the Engine Information System (EIS), was added.

Here's our interview with Stewart, the president of Blue Star Gas, the incoming chair of the National Propane Gas Association, a 10,000-hour pilot, a husband and a father of four.

Your grandfather Paul Stewart was a barnstormer in Kansas in 1918. How did he come to buy a small utility in northern California?

My grandfather grew up in southeast Kansas, flew a Curtiss Jenny as a barnstormer and used his earnings to help pay for an education at Stanford University.

That's how my family came to California. He started a stock brokerage firm in San Francisco in 1926 and the company survived the Great Depression with work in the securities business, including underwriting for Pacific Gas and Electric. He was astonished at how the utility was able to service their debt throughout the depression. Coming from the Midwest, that appealed to him so he decided that he wanted to be in the utility business.

In 1946, he bought Garberville Gas, a small utility about 200 miles north of San Francisco that had been

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Stewart says they considered themselves strictly a Cessna family until realizing in 2018 the versatility and dispatch reliability the King Airs could bring to their operations.



providing propane sales, equipment and related services to customers since 1938. They rebranded it Blue Star Gas soon after buying it. He never worked in the business, he worked his career in the brokerage firm and my dad ran Blue Star Gas before me.

Are there other family members involved in the business and possibly a fourth generation interested?

My wife Samantha Stewart is director of wholesale and my cousin Alex Gallard is our in-house counsel. As for a fourth generation, the short answer is: we'll see. I have four children aged 8 to 25. My two oldest, both daughters, are working elsewhere which is a requirement within our family. You must have a master's degree and you must have worked elsewhere before joining the family business. That approach was established by my grandfather.

Tell us about the business.

Blue Star Gas is a traditional propane distribution business in that we serve residential, commercial and industrial customers and can provide product for any use they have. In addition, we also have two significant divisions: one that focuses on power generation (backup and prime power) and another that focuses on fleet conversions to propane from gasoline usage. Each market is different and has a different mix of customers and uses, but we will engage in all of these services at any of our locations.

We have 16 locations or markets in California, Oregon, Washington, Utah and Arizona that serve 30 counties in those states. Fourteen of those markets span from the

Golden Gate Bridge in San Francisco to the Canadian border. Our other two locations are Salt Lake City, Utah, and Phoenix, Arizona, so we operate in a perfect 600-mile arc from our home office/base of Santa Rosa, California, to Seattle, Salt Lake City and Phoenix.

Why is aviation important to the business?

We operate in rural propane country, places where there is either none or no practical commercial air service. We accomplish things with aviation that simply could never be done otherwise, and we do that every week to grow and foster the business.

We have owned a hot air balloon for 15 years, albeit far slower than a King Air, it also has its mission. It is operated by Wine Country Balloons to fly their passengers over the Russian River wine country multiple times per week. The balloon is part of our brand recognition in our home office market of Sonoma County, and it has been tremendously effective.

Although you were a family of pilots, you didn't always use aircraft for business, though, right?

Besides my grandfather, my father and uncle both flew, too, so I am also a third-generation pilot in my family. My wife is taking her private check ride next month to become the first female pilot among the family. I grew up in my father's Cessna 180 and 140. I was my father's "autopilot" at age 8; I learned to fly instruments as that was all I could see.

My father started flying occasionally for business with our 1956 Cessna 180 in 1964 along the California coast >



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from Crescent City to Santa Rosa, when our home office was Garberville, California (O16). There is a tremendous amount of inclement weather on the northern coast of California and the 180 wasn't the right equipment for daily operation out of that airport.

I got my private ticket in 1987 and after working in management consulting and receiving my MBA I joined the business in 1996. Blue Star had 38 employees at that time and five locations. The first year I drove 48,000 miles, and I asked myself why I was doing this. I got my instrument ticket, bought a Cessna P210 and began flying 400-500 hours a year to our operations and for industry meetings. We then bought a Cessna 421, then a second 421 because I realized one couldn't run that aircraft 600 hours a year due to maintenance requirements.

Tell us about the current Blue Star Gas fleet and how the King Air aircraft are used.

We ran the two Cessna 421s for 10 years, and in 2018 we sold both and bought a King Air B200 and a King Air F90. We have always been a Cessna family, we still have the 1956 Cessna 180 and we also have a Cessna 206. We chose the King Airs because of the support and parts availability rather than the Conquest family that we considered.

I have flown 9,800 hours and will be surpassing 10,000 hours in the next couple of months. Approximately 60 hours a year of my flying is in the Idaho backcountry in the 180. I enjoy fly fishing and am able to access great fishing in the Middle Fork of Salmon River drainage about 20 days a year. I host some weekends with friends and we utilize our 206 as well for those long weekend trips with large groups. All four aircraft are used for business missions depending on the number of passengers and range required for the trip.

Both King Airs have been terrific platforms in growing our business. We use the B200 for longer trips, which include industry meetings around the country as well as transporting employees in and out of our training center on the Oregon coast. The F90 is used for the weekly "milk run" to the Northwest primarily. We will leave on Monday or Tuesday morning at 0700 and make five quick turns to drop off or pick up and then drop employees as far north as Seattle. Then on Thursday or Friday afternoon we pick everyone up and get them home for the weekend. We move team members in functional areas of safety, management, sales, auditing, legal as well as specialists like generator technicians, traveling service technicians or drivers to reposition equipment throughout our footprint.

Tell us more about the two King Airs you're currently operating.

We acquired our F90, N128JP, in 2018 as well as our first B200. The F90 had the American Aviation ram air modification at purchase. We have added 5-bladed MT props, an all Garmin panel including the Engine

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The B200 is also used for philanthropic missions of transporting puppies for Canine Companions for Independence (CCI). Above, Jeff holding a CCI puppy before departure to Boise, Idaho.

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“For the areas that we operate in and the airports that we go into, the King Airs are absolutely the right fit for what we’re doing.”

Information System (no more analog round dials). We have redone the interior and carpet as well.

We sold our first B200 with -42 engines, and concurrently in 2020 bought N222CY that we are flying today. That aircraft has the wingtip extensions with BLR Aerospace winglets, -61 engines and the G1000 NXi avionics suite and wing lockers. We spend a lot of time at FL 350 where we typically burn less than 500 lbs all in, or 70 gallons an hour. We can comfortably fly just over six hours and achieve 1,900-2,000 nautical miles with a modest tailwind of 30-40 knots. Regular nonstop routes include Santa Rosa, California, to Manassas, Virginia; Asheville, North Carolina; or Destin, Florida. If winds are not too strong, Dallas to Santa Rosa is doable. It has also flown the city pair of Garberville to Phoenix Sky Harbor. The B200 is incredibly versatile.

How have the King Air aircraft supported growth of Blue Star Gas?

We really have built the business around aircraft. We are able to move people to support and grow the business into all of our markets to develop them, and then hire behind as demand materializes to support the headcount financially. It is a formula that we continue to do in waves as opportunities present themselves. This allows us to be very opportunistic but also focused and disciplined. The aircraft allow us to have much more face time with employees than we otherwise would, and business aviation allows us to maintain our company culture and achieve the high level of safety we maintain.

We built our whole Autogas fleet business with our aircraft. We are part of a national group called Alliance Autogas and we support customers in seven western states, including locations where we don't even have operations. We will fly to visit a prospect, advance the sale process to conclusion, then perform system design and permitting as needed. When it comes time for the installation we will dispatch trucks and personnel for the infrastructure installation, and then we select another propane company to make the actual deliveries to our equipment. We maintain ownership of the equipment and billing relationship with the customer. The approach

works for all parties concerned. This simply could not be done without the aircraft. We have deployed this model in Tillamook, Oregon; Flagstaff, Prescott and Tucson, Arizona; as well as Burley, Idaho, and Moses Lake and Pasco, Washington.

How does the company manage flight operations?

We have a chief pilot, Byron Barnes, who flies about 50% of the 900 hours a year we fly in the King Airs combined. I fly the balance to meetings that I attend or industry meetings. Starting in June 2023, I become Chair of the National Propane Gas Association and will be using our B200 to travel all over the country to state industry meetings. Being based on the West Coast, that will likely be 250 hours of flying alone.

You've also recently started flying the B200 for philanthropic missions. Tell me about your involvement with Canine Companions for Independence (CCI), a national organization that enhances the lives of people with disabilities by providing highly trained service dogs at no charge to the recipient.

I began flying for CCI during COVID when the airlines shut down the live animal transport programs that CCI relied on to move their animals. Myself and three other pilots moved many dogs that were waiting at the breeding center. I have delivered over 150 puppies around the country including Seattle, San Diego, Great Falls, Boise, Denver, Columbus, Dallas, Orlando and Manassas. The most I have had on board was 16 pups; their genetics are so strong to be focused and docile that they are the best passengers I fly!

The King Air is a wonderful platform with the flexibility of easily removing a portion of the interior for crates and having dividers to muffle yelps if needed, which is rare. CCI continues to utilize private aircraft for transportation. The experience for the dogs is so much less stressful than commercial flights. All the same reasons that we like private aviation are the same reasons they will continue to use private aviation. We continue to fly pups in conjunction with business trips we are taking.

As Blue Star continues to grow, are you finding any limitations with the B200?

We have grown a lot, and certainly that growth has been supported going from the 421s to the King Airs. Our organic growth target is 12% to 15% every year of new customers within our footprint. The goal is to double the company every six years and we've been doing that for a long time.

With that growth, we are finding ourselves with eight people more frequently and sometimes we have a need for even more than the eight who can fit in the 200. A 350 certainly would fit the bill someday. When we do grow into a larger airplane, it'll be a King Air absolutely. For the areas that we operate in and the airports that we go into, the King Airs are absolutely the right fit for what we're doing. 🇺🇸

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Oshkosh Diversions

Three itineraries to consider during the annual EAA AirVenture

by Melinda Schnyder

If you're planning to fly to EAA AirVenture Oshkosh – which runs July 24-30 this year – we've rounded up three suggestions of destinations to explore on your way to or from Wisconsin. Whatever direction you're traveling, consider diverting to one of these worthy stops.

Minneapolis, Minnesota

Visitors come to the largest city in a state nicknamed “Land of 10,000 Lakes” for easy access to those famous bodies of water (there are actually 11,842 according to state officials) while also enjoying the mix of arts, culture, sports, entertainment and dining that the city of nearly 4 million offers. Minneapolis has 180 parks, 22 lakes, 12 gardens and seven golf courses within city limits, plus the Mississippi River. Outfitters make it easy to bicycle or kayak around the area.

Outdoor highlights include the St. Anthony Falls, the only natural waterfall on the Mississippi River's 2,300-plus miles from Lake Itasca, Minnesota, to the Gulf of Mexico; the only arched bridge made of stone on the entire Mississippi River; and the more than 40 artworks in the 11-acre Minneapolis Sculpture Garden outside the Walker Art Center.

If you're looking for cooler indoor activities, there are more than 50 museums. Music fans will want to explore Paisley Park, the



Located along the Mississippi River, as well as being home to 22 lakes, kayaking is a popular activity in Minneapolis. Here with the city's skyline as a backdrop.



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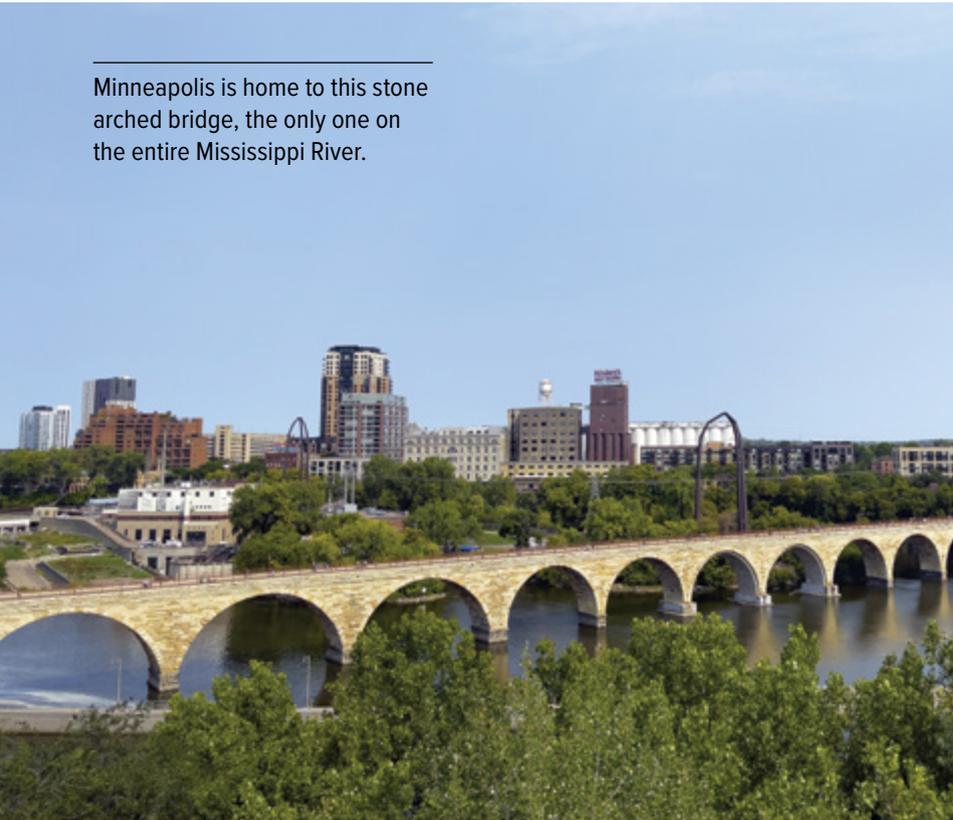


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Minneapolis is home to this stone arched bridge, the only one on the entire Mississippi River.



private estate, studio and creative sanctuary for the late artist Prince, born Prince Rogers Nelson in 1958 in Minneapolis. Aviation museums in the area include the Minnesota Air Guard Museum and the Commemorative Air Force Minnesota Wing Museum.

Check the Minnesota Twins schedule for a game at Target Field or opt for a tour of the \$545 million ballpark that opened in 2010 and has been rated a Top 10 Major League Baseball Stadium Experience by ESPN the Magazine. Or visit the St. Paul Saints, the Triple-A affiliate of the Twins.

Aviation enthusiasts shouldn't miss staying at Rand Tower Hotel, which opened in late 2020 in one of Minneapolis' oldest skyscrapers. The 262-room hotel is part of Marriott's Tribute Portfolio of independent hotels and has an aviation theme honoring Rufus R. Rand Jr., who commissioned the building that was completed in 1929 and integrated his love of aviation into the building's exterior and interior design. Rand's obituary, published in *The New York Times* in October 1971, said he was the last surviving member of the Lafayette Escadrille, a group of volunteer American aviators who formed a separate fighting unit in France's air force in 1916 before the U.S. entered the war.

Plan your trip: [Minneapolis.org](https://www.minneapolis.org)

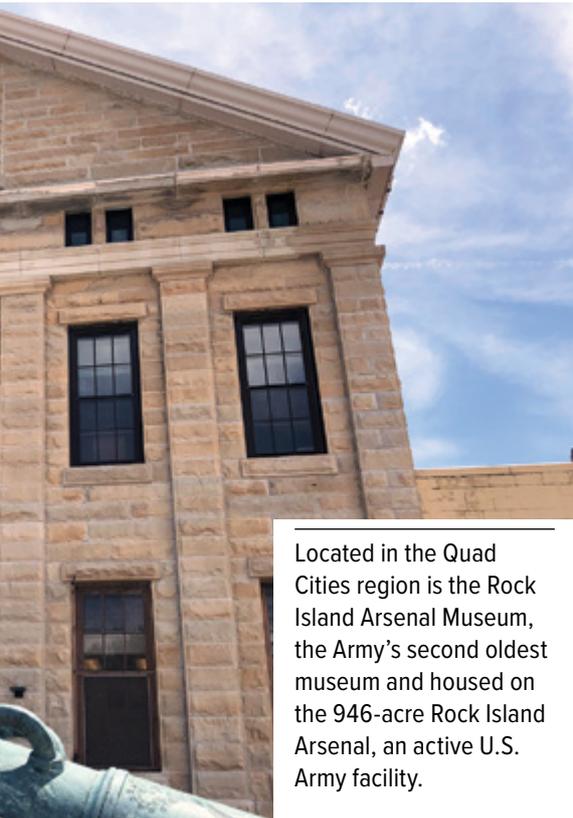
Quad Cities, Iowa/Illinois

The Quad Cities region, a collection of communities straddling the Mississippi River and the Iowa/Illinois

state border, has an interesting array of attractions that are easily drivable once on the ground. Catch minor league baseball at Modern Woodmen Park, home of the Quad Cities River Bandits; see impressive collections of Haitian, Colonial Mexican and Midwestern artworks at the Figge Art Museum; visit the Mississippi River Visitors Center, home to the largest roller dam in the world; and explore the Rock Island Arsenal Museum, the Army's second oldest museum (the museum is on the 946-acre Rock Island Arsenal, an active U.S. Army facility, so plan ahead for access).

The main cities are considered Rock Island and Moline in Illinois and Davenport and Bettendorf in Iowa, though you'll likely find yourself in some of the other 15 surrounding smaller towns. If you're a fan of the History Channel's "American Pickers," don't miss a detour to LeClaire, Iowa, to see Antique Archaeology, the store that Iowa native Mike Wolfe opened a decade before television viewers got to know him. LeClaire is considered the home base for the show, the 24th season of which aired this spring.

Also in LeClaire, history and aviation buffs will want to visit the Buffalo Bill Museum. Infamous frontiersman and showman William "Buffalo Bill" Cody was born in LeClaire in 1846 and despite its name, the museum covers wide-ranging local history. That includes an exhibit with original artifacts on James J. Ryan II, the man credited with patenting the first U.S. design for a flight data recorder, or black box.



Located in the Quad Cities region is the Rock Island Arsenal Museum, the Army's second oldest museum and housed on the 946-acre Rock Island Arsenal, an active U.S. Army facility.



The aviation theme at Rand Tower Hotel in Minneapolis carries throughout the building.



One of the exhibits at the Buffalo Bill Museum in LeClaire, Iowa, showcases original artifacts on James J. Ryan II, credited with patenting the first U.S. design for a flight data recorder.



LeClaire, Iowa, is also home base for the History Channel's "American Pickers," and Mike Wolfe's store Antique Archaeology.

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Another interesting aviation connection hangs in the atrium at Quad Cities International Airport (KMLI): a restored 1928 Velie Monocoupe. A Davenport-based company operated by John Deere descendants first purchased a company that developed airplane motors and eventually bought the company that had been manufacturing the Monocoupe.

It's hard to miss the influences of John Deere in this area – both the blacksmith who developed the first commercially successful, self-scouring steel plow in 1837 and the company he started and moved to Moline in 1848 for river and railroad access. Deere & Co. still has its world headquarters in Moline; visitors can see and climb in new and vintage equipment while learning more about the company history and evolution through interactive and immersive exhibits at the free John Deere Pavilion.

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In Grand Rapids you'll find the Gerald R. Ford Presidential Museum, highlighting the life of the 38th U.S. president. (photo credit: MeLinda Schnyder)



The Frederik Meijer Gardens & Sculpture Park is among the world's 100 most-visited art museums. (photo credit: MeLinda Schnyder)

Grand Rapids, Michigan

The namesake rapids are no longer flowing in the portion of the Grand River that runs through the state's second largest city, but Grand Rapids offers plenty of other activities to keep you busy, especially if you're interested in history, art or craft beer.

The city's most visited museum is the Gerald R. Ford Presidential Museum, which takes you through the life of the 38th U.S. president from moving to Grand Rapids as an infant to practicing law there and becoming president when Richard Nixon resigned in August 1974. Also downtown on the west bank of the river, visit the Grand Rapids Public Museum to see historic and cultural regional artifacts on display, including iconic furniture pieces showcasing the city's history in designing and manufacturing residential and commercial furniture as well as a 1931 Driggs Skylark biplane said to be the last remaining of 21 produced.

Six miles east of downtown, the Frederik Meijer Gardens & Sculpture Park is a 158-acre campus with indoor

and outdoor themed gardens, a five-story tropical conservatory and a permanent collection of nearly 300 sculptures that includes major works by artists such as Edgar Degas and Ai Weiwei. It is among the world's 100 most-visited art museums.

You can't come to Grand Rapids without exploring why it's nicknamed Beer City USA. Sip your way through the self-guided Beer City Ale Trail, which includes more than 40 craft breweries within a 30-minute drive, or take an organized tour by trolley or bicycle. There are options for other craft beverages, including non-alcoholic options, and the city has great food options to pair with its drinks.

Plan your trip: ExperienceGR.com 



Nicknamed Beer City USA, Grand Rapids is home to a large number of craft breweries which serve not only craft beer, but other craft beverages, including non-alcoholic options. (photo credit: MeLinda Schnyder)

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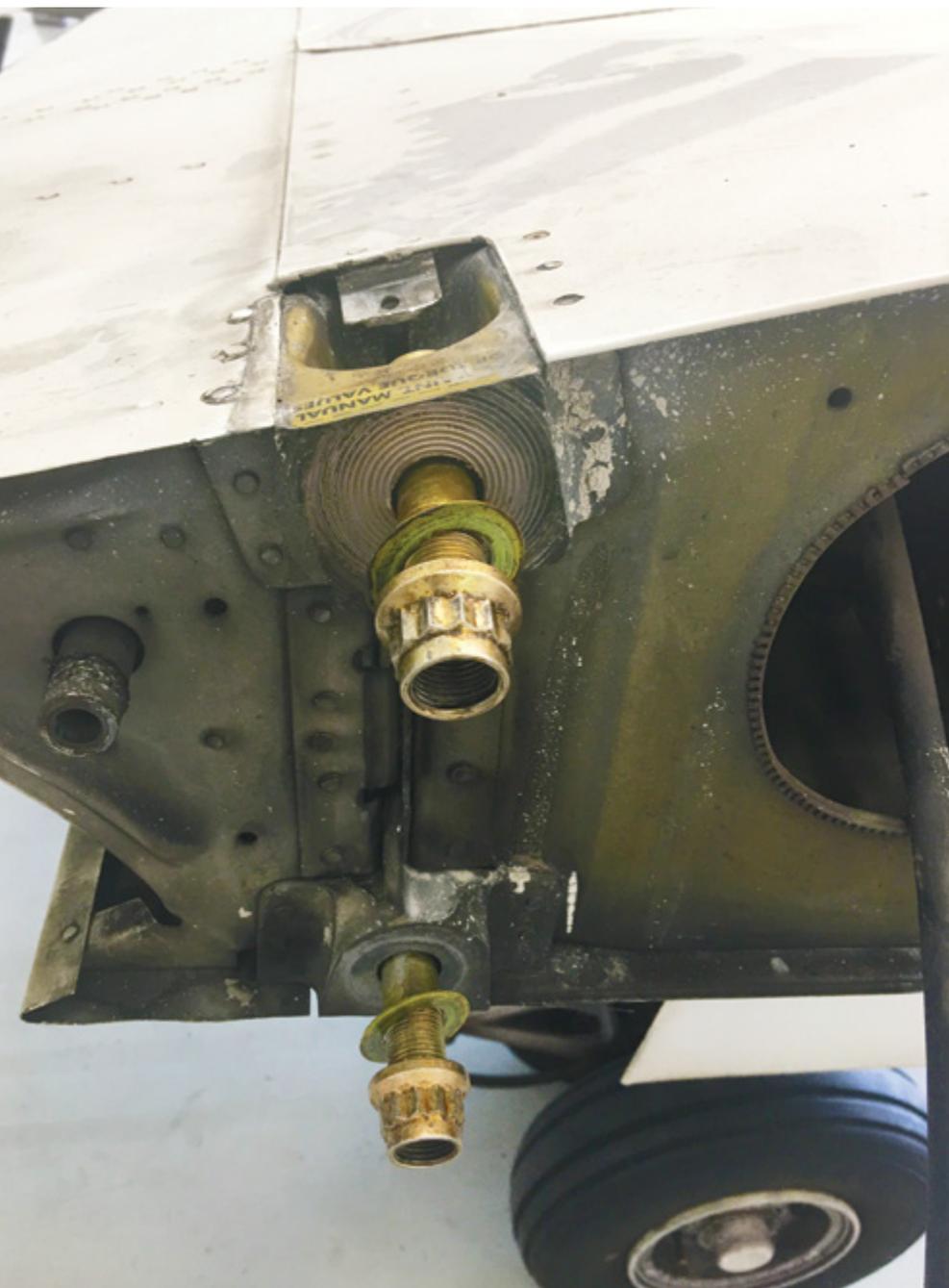
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The Wing AD – Who, What and Where

by Dean Benedict



I've been getting a few calls lately about "the wing AD." King Air owners want to know: Do I have to do it? And if so, where should I go? They are referring to the Federal Aviation Administration's (FAA) Airworthiness Directive (AD) 91-12-10, which applies only to certain King Air B200s and 300 models that were built in the mid-to-late 1980s.

The AD stipulates that somewhere between 8,300 and 9,500 hours of airframe time (depends on the King Air model), the wing bolt attach fittings must be modified using a specified kit. When the factory changed the lower forward wing bolts from "in tension" to "in shear," they didn't like the design of the spar attach points on certain King Air models and AD 91-12-10 was the result.

SERIAL NUMBER APPLICABILITY AD 91-12-10

Models B200, B200C and B200T: BB-1158, BB-1167, BB-1193 to BB-1203, BB-1207 to BB-1312, BB-1314 to BB-1334; BL-124 to BL-132; BT-33

Models 300 and 300LW: FA-2 to FA-190

The AD lists the affected King Airs by serial number, which I have included in the box (right). There's your answer on "who" is affected.

What Happens?

To comply with this AD, the wings must be removed ... yes, removed. Of course airplanes are disassembled and reassembled every day, so what's the big deal? If it's *your* airplane, it's a *huge* deal. When the wings are pulled off a King Air, all the electrical connectors for lighting, fuel quantity, etc. are disconnected; all the plumbing for the fuel system is disconnected; and all the cables for the control surfaces (ailerons, aileron trim tabs, flaps) are disconnected. It's major surgery.

Once the kit is installed, everything is reassembled and the wings are put back on the airframe. Of course, that is easier said than done. Things always come apart faster than they go back together.

Where To Go?

If I'm asked where to take a King Air for this job, I always recommend Textron Aviation's service center in Wichita, Kansas (KICT). If there's a King Air out there that is affected by this AD and has not yet had the kit installed, I would take it there. This is not the time to shop around for a "good deal." The service center there has all the necessary equipment and experience to get this Wing AD done properly.

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Photo left: The correct cable routing hole (top), notice it has caterpillar chafe strip around the inner edge to protect it; and the lightning hole (bottom), with no chafe strip and the improperly routed cable causing damage.

Inexperience with the major maintenance required by this AD can have devastating consequences. This cannot be emphasized strongly enough. You do not want to go down that road, as you will soon see.

An Ordeal to Avoid

Years ago, a small charter business had a fleet with a couple of King Airs, plus some Barons and a few other aircraft. The owner-operator was methodical and attentive to the maintenance requirements of his fleet. One of his King Airs, a B200, was subject to AD 91-12-10. Compliance was due by 9,500 hours TIS (Time in Service).

Although most of the maintenance on his fleet was done in-house, he knew he had to go elsewhere for this AD. As the deadline approached, he made arrangements to take his King Air to a Beechcraft shop for a Phase Inspection and compliance with the AD.

When the work was complete, the owner picked up his King Air and flew it back to his home base. A couple things caught his attention on that return flight: He thought the ailerons felt funny – something was different – and the control wheel travel was greater in one direction than the other; he was certain it wasn't that way before. These were unsettling observations, especially since the wings had been off, so he contacted the shop and took his King Air back for them to look things over.

The shop kept it for 3 days and reported that nothing was found. The owner-operator picked it up and took it home again. The ailerons still felt odd, and the yoke

travel was still uneven from side to side. It was disturbing, but he didn't know what else to do.

200 Hours Later

After 200 hours, the aircraft was due for another Phase Inspection and he brought it to my shop; I had never seen this King Air before. We proceeded with the inspection as usual, but right off the bat, I had bad news to report. (This wasn't how I wanted to start with a new customer, but I had no choice.) The flap track rollers were a disaster. All of them were incorrectly installed – every single one – and there are 16 of them!

Every aft roller was installed in a forward position and every forward roller was installed in an aft position. Further, every roller was reversed or inverted or turned around in some way. You could not screw up flap track rollers any worse than this. It was a case study on every mistake possible. The only good thing was that no real damage was done to the rollers or flap tracks. We caught it in time.

Needless to say, the customer was furious. He wanted pictures. He was going to take the previous shop to task on this issue since they had the wings off and the control surfaces detached. He wondered out loud what I was thinking: How was this signed off during the Phase Inspection?

More Bad News

As my wife reached for the digital camera (no fancy phones back then), I got the ladder. We were getting a

close-up shot of an outboard flap roller from the top of the wing. I started to manipulate the ailerons so she could get the shot, and I heard a strange grinding noise. We jiggled it again for a better shot at the flap roller and I heard the noise again – a raspy grating noise. Something was not right.

Everyone stopped what they were doing in the shop and gathered around. I moved the aileron again and – grate, grate, grate. It's hard to tell exactly where this sound was coming from, so one guy got under the wing and poked his head into the wheel well. I moved the aileron some more – rasp, rasp, rasp. The next thing I heard was: "Oh shoot! This is NOT GOOD."

An aileron cable, routed incorrectly, *was sawing through the rib in the wing!* Everybody in the shop was taken aback. Nobody saw that coming!

Inside the wing structure, the ribs have lightening holes for weight reduction. Holes for cable routing are smaller, often oval-shaped with a protective lining to prevent chafing. They are very different. It's hard to confuse the two, but apparently someone found a way.

Since both wings had been off for the AD, we thought we'd check the other wing for good measure. We found the same problem on the other side! I was in shock.

I struggled with how to deliver this news to the already livid owner. As if the flap track rollers weren't bad enough,

I now must tell him the aileron cables are slicing through the ribs in both wings. We decided an email with a brief description and a photo of the cable cutting into the rib would be best. In the subject line, it said, "More Bad News; Call Dean Now."

My phone rings. Words cannot describe the unbridled rage that overcame this owner-operator. "No wonder the ailerons felt so strange! No wonder the yoke was suddenly out of whack! How could they have done this? How could they have not found this when I brought it back squawking the ailerons?" Phone calls, photos and emails abounded, some with expletives undeleted. But as the tide of emotion receded, we turned to solutions.

Focused on the Fix

I sent the photos to the tech reps at Beech in Wichita. We discussed repair options on the phone. They devised a fix for the ribs and we executed it. Although we did not have to remove the wings again, we had to go pretty deep with this fix.

We disassembled the flaps and ailerons on both sides; inspected the aileron cables for broken strands, and fortunately they were still good, so we dodged a bullet there. We properly routed the aileron cables in each wing. When we reinstalled the flaps and ailerons, we made sure all the flap track rollers were correctly installed.



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After reconnecting the aileron cables, we had to carry out a complete re-rig of the ailerons. We used travel boards to ensure the travel distance was correct on each side. We made sure the yoke was centered with each aileron in the proper neutral position – thus fixing his yoke problem.

Lessons Learned

Generally speaking, aircraft owners trust maintenance shops to keep their aircraft in airworthy condition; they are the maintenance experts. Still, you can't totally ignore your gut feelings. In this case, the owner-operator knew something was amiss but felt trapped between a rock and a hard place. He took his King Air to a maintenance center for the wing attachment AD. He got it back with squawks that he didn't have when he brought it in. He

returned to the service center and they told him nothing was wrong.

He was stymied at that point and maybe started questioning his own observations. In hindsight, his perceptions were spot on. I'm sure he learned a good lesson on paying attention to his gut.

A note about the shop involved: This incident happened many years ago. The shop was newly minted and opened to great fanfare, only to close quietly a few years later. I would like to think this shop was an anomaly among Beechcraft service centers.

I have always been reluctant to criticize other shops because I know how brutal the business of aircraft maintenance is. The challenges are many, and the stress is off the charts. On the other hand, discussion of the pitfalls and common mistakes made in King Air maintenance is what

I'm here to do. These are lessons for us all.

The Wing AD Today

I must say, I didn't expect to be fielding calls about the Wing AD some 32 years after it came out. I assumed the King Airs to which it applied had the AD done by now. Ha! Haven't I learned never to assume anything?

Some King Airs only fly 100 hours per year or get parked in a hangar for a spell. Maybe there are some which should have had this AD completed before now have somehow slipped through the cracks. This needs to be checked out right away.

Again, the serial numbers for B200s affected by this AD (also listed in the box on page 21) are: BB-1158, BB-1167, BB-1193 to 1203, BB-1207 to 1312, BB-1314 to 1334; BL-124 to 132; and BT-33. The serial numbers for 300s affected by this AD are: FA-2 to 190.

The AD can be found at drs.faa.gov or email me and I'll send you the pdf file; it's only two pages. I would love to hear back on what you find.

As always, safe & happy flying! **KA**

Dean Benedict is a certified A&P, AI with over 45 years of maintaining King Airs. He owned and ran Honest Air Inc., a maintenance shop that specialized in Beechcrafts with an emphasis on King Airs. Currently, with BeechMedic LLC, Dean consults with King Air owners, operators and maintenance shops on all things pertaining to King Air maintenance. This includes troubleshooting, pre-buys, and maintenance management. He can be reached at dr.dean@beechmedic.com or 702-524-4378.

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Ice Vanes: How Important Are They?

by Tom Clements

One of the ongoing debates among King Air pilots has to do with the necessity to use the engine anti-ice system as the Pilot's Operating Handbook (POH) directs: "Before visible moisture is encountered at +5°C and below, or at night when freedom from visible moisture is not assured at +5°C and below."

Depending upon your exact King Air model and the cowling modifications it may contain, power and airspeed always take a hit when the ice vanes are deployed. The speed loss may range from five knots to as much as 15 knots. It is this performance degradation that makes many pilots reluctant to pull the handles or flip the switches for ice protection.

The other factor that influences a pilot's decision about ice vane usage is the experience and beliefs of other pilots with whom he or she associates. When the crusty old gray-beard that has been flying these airplanes for thousands of hours believes that ice vane usage is not very important, it is hard for the newbie to go by the book. In addition, when it is so frigidly cold outside that the water content in the air is already well-frozen, such that no ice adheres anywhere on the airframe, it is an easy leap of faith to conclude the engines are also not going to be harmed by ice.

I strongly disagree with the casual approach to ice vane usage and plead with you to indeed go by the POH's directions. Let me explain why.

Depending on your piloting experience – specifically, how much time you have spent flying in clouds – I will wager that you have experienced a variety of icing events. Although the OAT may be the same from one event to another, the outcome can, and does, vary greatly.

Whereas last week's icing encounter really got your attention as the windshield heat barely kept up with the demand, this week the airframe came through without a trace. Go figure!

In support of those pilots who have a casual approach to engine anti-ice usage, perhaps they are the luckier ones and have had the great preponderance of their icing encounters be non-events. Hey, I can relate! Especially when we are up there in the high 20s or low 30s (thousands of feet) and the airframe is staying ice-free; it surely seems logical – but incorrect – that the engines will also be safe.

I am going to share two separate scenarios that happened to individuals that told their stories directly to me. My hope is to make you "scared straight" so that you will embrace the POH's conservative approach to ice vane usage.

The first story involves an old friend of mine with whom I have conducted initial and recurrent King Air training since the 1970s. When I first met this fellow, he was flying a B90 and the various companies he advanced with moved up the King Air ladder so that he was checked out in just about the entire King Air lineup by the time he retired. Although he never argued forcefully with me about ice vane usage, being a kind, southern gentleman, I know that he was reluctant to deploy the vanes unless the airframe was collecting significant ice. Nothing I taught could convince him that he was playing a dangerous game.



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

corpangelnetwork.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

Then one evening while at home, I got a call from him. It went something like this: “Well, Tommy (He always called me that!), I guess I should have been listening better to you all these years when you preached about ice vane usage. Today, at FL280, we were in visible moisture that was so thin it could have been the contrails of a 747, 20 miles ahead! Of course, I didn’t activate the engine anti-ice. When I started the descent, and changed the power setting, I noticed that things weren’t matching up like they did before. This continued through the landing so I had the mechanics take a look. When they got the flashlights and mirrors to look at the first stage compressor blades, they reported bent blades on both engines. So now we are sending our engines out for repair and will install a couple of loaners in the meantime. I couldn’t believe it, but I saw it! You were right!”

The second story involved a B200 also flying in the upper 20s, but this time it was night over a dark expanse of the Australian Outback. The pilot noticed that the nav lights were giving a glow on the moisture they were in, so he extended the vanes. He was not sure how long he had unknowingly penetrated the tops of these smooth clouds but doubted that it could have been for more than a few minutes. When he broke free of the clouds and retracted the vanes, he noticed a 400 ft-lb, or so, torque split. In the descent, one engine started fluctuating and actually expelling some visible flames at times out of the exhaust stacks. That engine was found to have suffered first stage compressor damage – a bent blade.

For many years now I have always included a copy of a Pratt & Whitney Field Note in the section of my training manuals dealing with ice protection. I am sure those who have trained with me in the past or who have attended the King Air Academy recently have read this before, but I want to print it here for those who have not yet seen it:

In April 1982, a general correspondence was issued concerning the subject of Compressor Ice FOD (Foreign Object Damage). Winter is here again and after three incidents this month, it is time to reprint the original issue with a few new comments. During this past winter, we have received several engines for first-stage compressor FOD. In each instance, a single blade has been bent with the damage being caused by a soft or dull object – in all probability, ice.

The PT6 nacelle intake system is the result of a very exhaustive and exacting research program. Many hours of development flying in icing conditions with such equipment as closed circuit television cameras in the intake and fifty million flying hours have proven its effectiveness.

All flight manuals are very explicit when it comes to icing. “Deploy the ice vane prior to penetration.” The interpretation of icing, however, is sometimes a little more difficult. Depending on the OEM

(Original Equipment Manufacturer), some will state that +5°C and visible moisture are the criteria. Others will only offer it as a rule-of-thumb. Meanwhile, pilots will, on occasion, wait until first appearance of ice on the windshield.

Night flying imposes an additional measure of difficulty. Here the criteria is sometimes only a check at regular intervals with the wing ice inspection lights. To properly understand when the ice vanes should be deployed, one must understand where the FOD comes from.

First, it does not build-up on the intake, break off, and then go through the engine screen. The sheer mass of the ice will stop it from turning the corner and hitting the screen. Secondly, even if it were to get in the intake plenum, the low velocity air at the screen, along with the ¼-inch mesh, would preclude any damage.

What actually happens if the vane is not deployed to perform the inertial separation of the moisture, is that this moisture will collect under the screen and freeze. Either when a piece breaks off, or when penetrating higher OATs and the ice separates due to melting, the engine sustains FOD.

The same will occur with snow. Although below the freezing point, if the deflectors are not deployed and the snow reaches the screen, there is sufficient radiant energy to melt and then refreeze under the screen.

Only if the flight crews understand this principle can they be convinced to properly manage the deicing vanes. One bent blade (which is typical of ice FOD) costs approximately 100 manhours in shop labor, plus the blade cost and cost of the software kit for reassembly. In addition, when an engine gets disassembled, hot-section components often require premature replacement and some class “A” Service Bulletins require embodiment. This adds unexpected cost to the FOD encounter. I know the pilots will tell you that the ice vane deployment costs them a lot in aircraft performance, but when you consider our economic times, one bent blade can be much more expensive.

Since this was first printed, two areas have come to light as to why flight manual procedures are not being followed. First is pilot education. Most pilots who have been involved with this FOD are not aware of the mechanism. Give them a copy of this field note. Last year, in the case of one operator, this is all that was necessary to resolve the problem. The second item is block time, or sector time. The fact is simple: when you deploy the aircraft anti-ice system, the aircraft slows down – some more than others. On short legs this does not amount to much, but when you are flying sectors of greater than one hour, it can be significant.

I cannot overemphasize how important this item of ice FOD is. The issue has gone beyond the dollars and cents phase and is now affecting the reputation of the airframe and the engine.

Does that information (right from the horse's mouth, as it were!) give you a better understanding of the mechanism? An important take-away is that what occurs in the engine intake may have little or no similarity to what the airframe is experiencing.

Knowing how fickle ice can be – benign one flight, scary the next – always makes me think of the classic movie line spoken by Clint Eastwood in *Dirty Harry*: “Are you feeling lucky, punk?”

If you choose to continue to be casual in your deployment of ice vanes, you must be feeling very lucky! I hope your luck holds out. Because if it does not, then the airplane's owner is going to be faced with a large, wasteful, maintenance expense. Flying a few knots slower will produce a lot less lost time than having the plane be grounded for a month or so for engine repairs!

I will leave you with a positive thought: Do you realize that specific range – the nautical miles you are traveling for each pound of fuel burned, calculated by dividing ground speed by fuel flow – almost always is improved due to ice vane deployment?! Amazing, but true. Unless you are flying at a very high altitude close to the certified ceiling, or fighting an extreme headwind, or you were

using a reduced power setting closer to max range than max power, then this statement is true.

You see, since the Fuel Control Unit (FCU) is a governor for compressor speed (N1), the reduction in intake air density due to ice vane extension makes N1 want to increase due to less compressor air drag. But the FCU reacts by reducing fuel flow to keep N1 constant.

The reduction in ground speed is proportionally less than the reduction in fuel flow, so the airplane actually becomes more, not less, fuel efficient. Write down your stabilized ground speed and fuel flow numbers next time, before and after ice vane deployment. Get your smartphone's calculator and do the division. I'm right, aren't I? Perhaps that will give you a little comfort when you observe the decrease in speed.

Bottom line? You've heard it before but I'll state it again: “*When in Doubt, Get 'em Out!*” 🚫

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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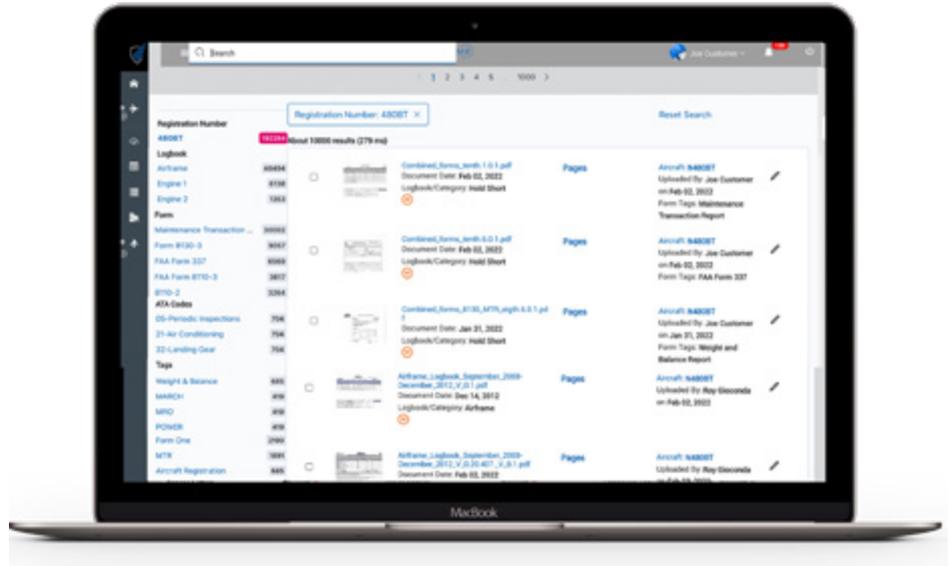
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“When we introduced our MACH Search engine in 2021, it set the standard as the first machine learning search engine purpose-built to meet the specific needs of aircraft owners and operators,” stated Roberto Guerrieri, Bluetail CEO and Co-Founder. “The many improvements we’ve built into MACH 2 are the results of what we’ve learned and what our customers and partners have asked for over these past two years.”



The company says that MACH 2 is the fastest, most logical and easiest-to-use digital records search engine in aviation. Guerrieri continued, “It lets aircraft owners and operators

perform faster and more accurate records searches, which in turn allows them to return their aircraft to service faster and at a lower cost.”

To achieve MACH 2’s industry-redefining capabilities, Bluetail’s engineering teams developed a series of enhancements to the search algorithms, creating advanced auto-organization and filters and an enhanced database architecture.

“While the technology behind MACH 2 is proprietary, the real differentiator is just how much it can do to help our customers achieve faster turns on each maintenance, compliance or conformity event,” added Bluetail VP of Development and Delivery Greg Baynham. “There are no cumbersome search filters. MACH 2 auto-recognizes all major filters, so maintenance personnel just have to click on the link to view, search or share logbooks, forms, ATA codes, file names, dates or whatever the job requires.”

“Today’s aircraft operators and maintainers need tools that make their work more efficient,” he continued. “Bluetail’s new MACH 2 Search is the only solution that has been developed to do just that.”

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Bluetail said that the MACH 2 Search will be available for Bluetail customers by the end of May, so it should be accessible now.

Learn more at <https://bluetail.aero>. 

The advertisement for King Air Academy features a blue and white color scheme. At the top left is the King Air Academy logo, which includes a stylized 'K' and 'A' with a checkmark-like shape inside, followed by the text 'KING AIR ACADEMY'. To the right of the logo is a blue banner with the text 'INITIAL, RECURRENT & PERSONALIZED TRAINING' in white, bold, sans-serif font. Below the banner is the website address 'www.kingairacademy.com'. The main body of the advertisement is divided into several sections. On the left, there is a section for simulators, featuring an image of a simulator and the text: 'G1000/NXi Full Motion Sim', 'G600TXi/750 Full Motion Sim', 'EADI/530's Motion Sim', and 'ADI/530's AATD'. Below this is a section for 'Host of the King Air Gatherings', featuring an image of a gathering and the text: 'Insights by Tom Clements' and 'King Air Training Videos'. At the bottom left is a section for 'Model Specific Training', featuring an image of a King Air aircraft and the text: 'In Aircraft Training' and 'Insurance Approved'. On the right side, there is a large image of a cockpit with the text: 'We'll train you in any aircraft, as long as it is a King Air.' Below the cockpit image is a text box that reads: 'King Air Academy is home to the most experienced King Air pilots and instructors in the industry. Our mission is to provide efficient, relevant and personalized instruction, specific to the King Air, for today's flying environment while respecting your time and money.' At the bottom of the advertisement is a blue banner with the phone number '602-551-8100' and the email address 'info@kingairacademy.com'. The background of the advertisement is a blue sky with white clouds and a King Air aircraft flying.

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