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# Paradise Found

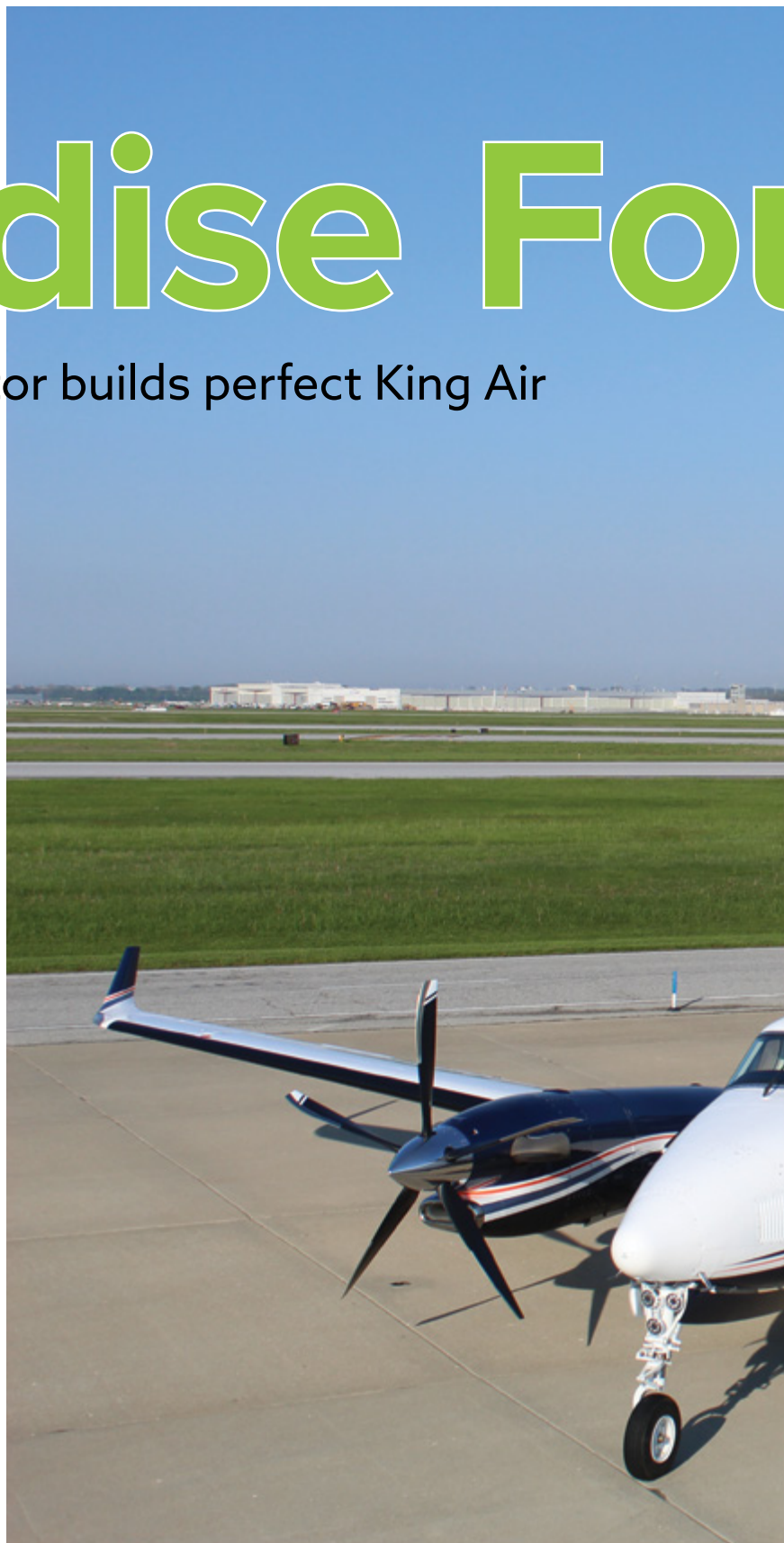
## Vacation home contractor builds perfect King Air

by MeLinda Schnyder

**H**e's only had use of FL-586 for six months, but Ben Giles is certain he's found paradise in the form of an airplane: a 2008 Beechcraft King Air 350 he purchased in 2020 and had extensively refurbished and upgraded at Textron Aviation's Indianapolis Service Center.

"This is the aircraft we will keep forever, or as long as I'm around," said Giles, a custom home builder based in Destin, Florida, who has built hundreds of homes in his career and now focuses exclusively on luxury vacation homes. "It's got everything we wanted: faster engines, the ability to carry nine or 10 people and all of our bags, new interior, new paint and upgraded avionics. It's a unique airplane with everything that we did to it. It's a 2008 model but we put in the 350i headliner right off the production line. We also put in electronic window shades, cabin moving map technology and XM Radio."

While the airplane was out of service for modifications, Textron Aviation received the STC for ground cooling, eliminating the need to power air conditioning systems via



# und

Ben Giles chose orange and blue exterior accent colors for FL-586's new color scheme to match the school colors of his alma mater, Auburn University Tigers. (Photo courtesy Textron Aviation Indianapolis Service Center)







Captiva Services is a family business; Ben builds the high-end vacation homes while his wife Christel decorates the interiors.  
(Courtesy photo)

the aircraft's engine. Instead, the aircraft is cooled using a vapor cycle system and evaporator/blower unit plugged into a dedicated ground power unit. Giles had the company's Tampa Service Center make that modification before returning the aircraft to service.

FL-586 is likely one of the first older King Air serial numbers to have the ground cooling system installed, a feature coveted on Florida's hot ramps. It is certainly one of the most rejuvenated 14-year-old models, with Blackhawk Pratt & Whitney Canada PT6A-67A engines capable of producing 1,050 SHP up to 25,000 feet, 5-blade natural composite MT-Propellers, lithium-ion battery, Pro Line Fusion avionics and the entire list of upgrades Giles mentioned.

Giles is a relative newcomer to business aviation ownership. A friend who flew a 1992 King Air 350 took him along on several recreational flights in 2015, fueling his interest in flying privately. He purchased a share of a Pilatus PC-12 single-engine turboprop through the fractional aircraft ownership program PlaneSense but always felt like he needed more room. When that ➤

Among the laundry list of upgrades Giles made to FL-586, installing Blackhawk Pratt & Whitney Canada PT6A-67A engines and 5-blade propellers has been among the most noticeable – from improved climb rate to jet-like speed and a quieter cabin.  
(Photo courtesy Textron Aviation Indianapolis Service Center)





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The Giles' have designed, built and furnished about 30 luxury vacation homes, most of them on the Florida Gulf Coast with unobstructed ocean views. Owning a King Air 350 has allowed them to expand their business, taking the model of building 6,000- to 8,000-square-foot homes to vacation destinations in Alabama, Colorado and the Bahamas.

(Photo credit: David Warren)

friend decided to move to an Embraer Phenom 300 jet in 2017, Giles bought his King Air. Until 2021, Giles also was an ownership partner in a Beechcraft Premier IA with a fellow general contractor.

He liked the longer range of the King Air, though, and opted to upgrade to the newer King Air and install Blackhawk engines for more speed.

"There's no jet out there that can do what the King Air can do as far as hauling eight or nine people unless you look at something like the Phenom 300 that is so much more money to purchase and operate," he said.

### **A custom home builder with an aviation degree**

Giles said he stumbled into a career in construction. He earned a degree in aviation management from Auburn University in 1984. He entered the U.S. Air Force after college and served four years active duty followed by eight years with the Air Force Reserve. He took a job with McDonnell Douglas consulting on the solid rocket booster program with NASA Headquarters in Washington, D.C. A friend invited him to partner on flipping a house; they made enough money to continue flipping and he had fun doing it, so he moved into a construction career full time.

In 1995, he built his first vacation home in a place he had often vacationed over the years: Destin, in northwest

Florida's panhandle and known for its Gulf of Mexico beaches. It was foremost a vacation home for his family that they rented out when they weren't using it. This was about the time VRBO had started making it easier for travelers to find vacation rentals by owners.

In 2010, the Giles' moved themselves and their construction business to Destin. Captiva Services is the construction and design side of the business. Ben builds, and his wife Christel finishes and decorates the interiors.

"It's been a family business since we got into it," he said. "My wife and I have always worked together."

The Giles' extended family works in the business, too, and flying privately has allowed them to expand the geographic footprint of the business. In addition to visiting construction sites, they use the King Air to travel to builder shows and home furnishings markets in New York, Chicago, Las Vegas and Atlanta, to name a few destinations. They also use it to travel to potential future building sites.

They not only build vacation homes in their home base of Destin, but also Auburn, Alabama, which is home to Giles' alma mater Auburn University; Lake Martin, Alabama, one of the largest manmade lakes in the U.S.; and the ski resort town of Beaver Creek, Colorado. They also have plans to build a rental in the boating paradise of The Abacos, Bahamas.



“We live in a small town so it’s very hard to get anywhere direct and quick on an airline,” Giles said. “From Destin, you have to fly to Atlanta or Dallas and change planes. With the King Air, we can get to Auburn in 45 minutes and to Marsh Harbour in the Bahamas in one hour and 45 minutes.”

These aren’t your average vacation rentals, these are 6,000- to 8,000-square-foot homes that sleep as many as 30. In Florida, for example, the Giles’ builds are large beachfront homes with gourmet kitchens, large dining rooms to accommodate everyone, multiple master suites, grand family rooms with pool tables and bars, and incredible outdoor living areas featuring pools alongside cooking and dining spaces.

“The vacation rental market has grown not just in Destin but all over,” Giles said. “And we fill a niche that doesn’t typically have as much inventory. We build the high-end, large homes that are harder to find. These are perfect for large families to have a reunion, friend groups with three or four couples and multi-generational vacations.”

The business came to a standstill during the height of the pandemic when Florida beaches and vacation rentals were closed for about 90 days. Since then, demand hasn’t slowed. Vacationers who might have traveled out of the country are staying closer to home, travelers wanting more control over their environments are opting for whole house rentals versus hotel stays, and Giles said he even had families renting his homes as places to quarantine.

They are among the owners in Echelon Luxury Properties ([echelonluxuryproperties.com](http://echelonluxuryproperties.com)), a boutique property management company. Several of the top properties in the Echelon portfolio – which includes homes in beach towns stretching from Destin to Panama City along the Scenic Highway 30-A – were built by the Giles’.

“We comprehensively manage properties for our owners, renting to high-end travelers and taking care of the asset as a whole,” said Sam Cobb, Echelon founder and CEO. “One area we are different is that Echelon is focused on offering personalized concierge services to our guests and owners alike. Our team meets each guest in person and arranges for all of the extras during their stay. From putting a Peloton in a property to scheduling an in-home massage to hiring a private chef for family dinners – service is at the heart of everything we do. The houses that Ben and Christel create are purpose-built for this type of high-end experience. Their thoughtful approach and attention to detail make them the best in the business when it comes to this type of product.”

### Creating a unique bird

Giles received his private pilot’s license in the 1980s while in the Air Force. He enjoys sitting in the right seat in the King Air but has no plans to pursue a multiengine rating.

But he’s glad to be back in the air regularly after a few decades away. Adding projects in Colorado and the Bahamas wouldn’t be possible without the King Air, he said.

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***“Adding projects  
in Colorado and  
the Bahamas  
wouldn’t be  
possible without  
the King Air ... ”***


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Giles upgraded the technology throughout the 2008 King Air 350, from moving maps in the cabin to Rockwell Collins' Pro Line Fusion avionics suite in the cockpit.

(Courtesy photo)



Christel Giles, who finishes and decorates the high-end vacation homes Ben Giles builds, managed FL-586's interior refurbishment.

(Photo courtesy Textron Aviation Indianapolis Service Center)

Giles has used Textron Aviation's Tampa Service Center since buying his first King Air in 2017, so when he needed a pre-purchase inspection for FL-586, a one-owner aircraft with 1,800 hours based in Ohio, he reached out to the Indianapolis Service Center. The Indy team coordinated the modifications on the airplane, sending it to the Tampa facility for the ground cooling add-on before handing it over to Giles in December 2021.


"One of our first trips when we got the King Air from the Indianapolis Service Center was a trip with 10 people to Las Vegas for a furnishings show," Giles said. "There was room for nine passengers, the pilot and all of our bags. We stopped for fuel on the way out there and flew home nonstop."

Besides the range, he's been impressed with the improved climb rate and speed compared to his 1992 King Air.

"The engines have been fantastic," he said. "On our way back from Colorado to Destin, I looked at the moving map and we were at 33,000 feet and going 499 miles per hour. Even with the tailwind, that's pretty speedy for a King Air, even a new one. It's also quieter. I have a friend who flies Wheels Up all the time and he said he could tell a huge difference in how much quieter it is when he flew on our King Air with the 5-blade props."

Ben chose the exterior accent colors of orange and blue, a nod to the Auburn school colors; Christel was in charge of the interior, which has a beige colorway throughout, from new seats with double-stitched details to fresh carpet and cabinet facing.

"We were very involved with all the details; we went to Wichita a few times to meet with the design team," Giles said. "It turned out the way we envisioned it. There's not another King Air like it in the world at this point, with all the things that we've done to it."

The aircraft has everything on his wish list ... for now. He admits he is eyeing the IS&S autothrottle for FL-586. 





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# Global Events and Local Effect: “War Hull”

by Kyle White

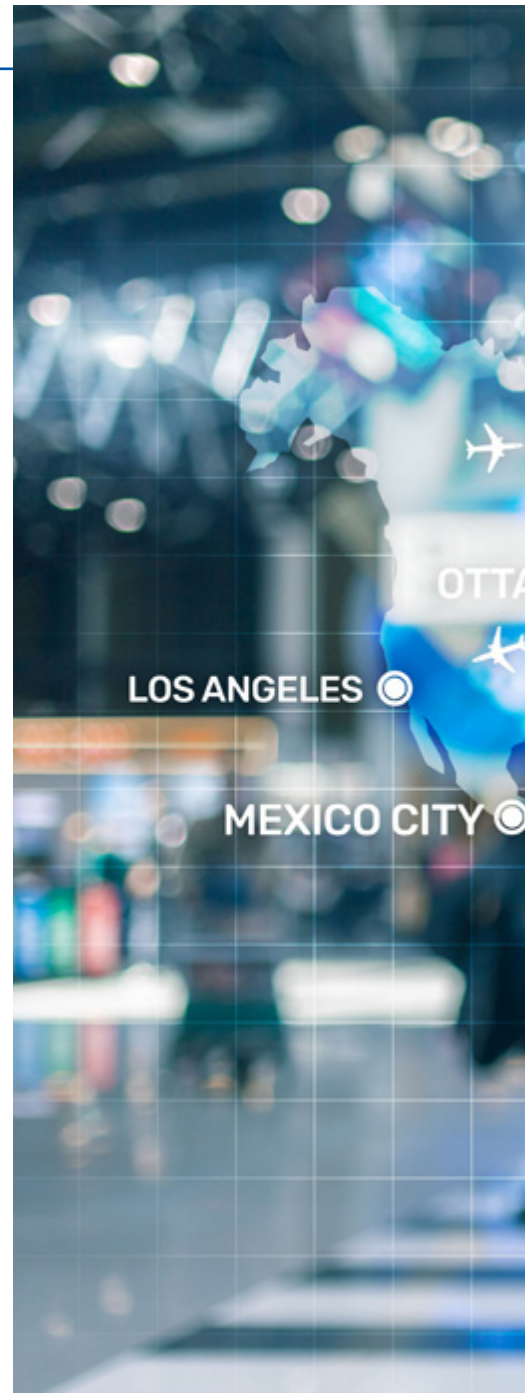
**L**ately, it seems there is always “something” happening in the world that derails the stability of the aviation ecosystem. In 2020, it was COVID. The pandemic brought the aviation industry to a screeching halt, causing all of us to look at each other asking questions that nobody knew the answers to. COVID sparked serious concerns within the aviation insurance community (see “Aircraft Insurance and Pandemics,” *King Air* magazine, May 2020). The disruption gave grounded aircraft owners time to comb through their operating budgets to find potential savings. Many looked to their insurance policy for premium credits while their aircraft were hangared. It wasn’t just the general aviation market looking for refunds; the airline industry received major premium credits as well because their premiums are based on passenger miles flown.

Now the pendulum has rapidly swung the other way and we are back to aircraft shortages and high demand across the board. From pilots and aircraft to hangars and jet fuel, everything is in short supply and resulting in higher costs. During the fourth quarter of 2021 and the beginning of 2022, the *King Air* owner had cautious optimism that this year could potentially bring a more stable insurance renewal experience. However, aviation insurance may get

added to the list of higher prices, once again. Signs are now pointing to a potential inflationary hard market, combined with re-insurance price hikes on the horizon.

As we are finally moving past COVID, the newest “something” that is likely to affect aviation is the outbreak of war and sanctions in Eastern Europe. This was not on the radar screen as 2021 came to an end. The ramifications of the ongoing war

has caused inflationary values to fuel, as jet and 100LL prices have jumped considerably. During the Aircraft Electronics Association convention in New Orleans in late March, an FBO owner was standing next to me when he received a message from his general manager notifying him that the fresh delivery of jet fuel was \$1.00 per gallon higher than their last load. This, of course, is an immediate hit to the *King Air* owner’s operating budget. The \$1.00/gallon increase







would cause the typical King Air 200 driver an additional \$90 per flight hour; at 300 hours per year, it would be an extra \$27,000. The international energy disruption is not the only ramification of the crisis in Eastern Europe felt by the aviation community.

The aviation insurance industry could face the largest losses in history, surpassing even those from 9/11. Billions of dollars in aircraft

and aircraft parts in Russia may be considered seized or confiscated triggering “occurrences” within aviation policies. If this occurs, we’ll see the aviation re-insurance market pricing go up, which will be felt by all N-registered aircraft owners too. We generally think about accidents or incidents creating insurance payouts. However, there are provisions in the aircraft insurance policy called “war hull” that can be triggered and render a total loss of

the aircraft even if it hasn’t suffered physical damage.

The policy covering your King Air is an “all risk policy,” meaning it’s covered, unless it is specifically excluded. Specific language from your policy may read:

“The Company will pay (minus any applicable deductible) for Physical Damage to a Scheduled Aircraft including ingestion and also including disappearance or

theft thereof that happens during the policy period and results in no recovery of the Scheduled Aircraft for thirty (30) days.”

The policy directly states that “theft” is covered. However, in the “exclusions” section it may state that there is no coverage if the loss is a result of claims caused by “confiscation, nationalization, seizure, restraint, detention, appropriation, or requisition for title or use by or under the order of any government (whether civil, military or de facto) or public or local authority.”

The exclusionary wording is why lienholders typically require aircraft owners to buyout this exclusion through purchase of “war hull” coverage. If your King Air is seized or confiscated, you might be so inclined to not make the next payment to the bank. The bank or leasing company is going to have a very difficult time talking the third party that seized the aircraft into continuing to make those payments on your behalf or give them back the collateral. War hull allows for the aircraft owner and the lienholder to be made “whole” through the insurance proceeds.

The added cost to buy back the war exclusions is much closer to pre 9/11 rates and has come down drastically since spiking around 2006. A recent example: A \$3 million King Air 350 was charged an extra \$900 to buy the war hull coverage. This equates to a 3 cents

war hull rate. To put it into perspective, before 9/11 this would have been a 2 cents rate.

When the “war, hijacking, extortion and other perils physical damage write-back” endorsement is purchased, it is added to the end of your policy and specifically adds back coverage for:

- a. War, invasion, acts of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection, martial law, military or usurped power or attempts at usurpation of power;
- b. Strikes, riots, civil commotions or labor disturbances;
- c. Any act of one or more persons, whether or not agents of a sovereign power, for political or terrorist purposes and whether the loss or damage resulting therefrom is accidental or intentional;
- d. Any malicious act or act of sabotage;
- e. Confiscation, nationalization, seizure, restraint, detention, appropriation, requisition for title or use by or under the order of any Government, (whether civil, military or de facto) or public or local authority;
- f. Hijacking or any unlawful seizure or wrongful exercise of control of the aircraft or crew in flight (including any attempt at such seizure or control)

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made by any person or persons on board the aircraft acting without the consent of the Insured.

Many people don't feel they have a real exposure to a situation that would be covered by this endorsement. While rare, there have been instances that pertain to segment "e." In the early 2000s there was a community bank that had a lien on a Learjet that was seized while in South America. The bank did not require the borrower to have war hull coverage. This resulted in lawsuits between the borrower and the bank. Eventually the bank was forced to make a significant write-off and a settlement with the borrower that was not covered by insurance. Another example occurred in 2008, when a Hawker 4000 that was delivered was seized by the U.S. government. For a brief period of time, the insurance carrier was preparing for a potential \$21 million loss. Fortunately for the insurance carrier, when the aircraft owner was able to resolve the misunderstanding with the government, the aircraft was returned and the claim was dropped. Both scenarios could have been an opportunity for the insurance companies to pay out under the war hull endorsement.

It is important to understand the war hull coverage can be triggered anywhere in the world, including the United States. If you review your policy and read through the

war exclusions and write backs, you may have questions around "what ifs." What if the war in Ukraine grows to include the United Kingdom, United States of America, France and/or the People's Republic of China? What if there is a detonation of "any weapon of war employing atomic or nuclear fission"? Either of these two events will once again have further effect on what is and isn't covered under your policy.

The following is a policy example of additional wording you may come across where the insurance company will pullback or eliminate the coverage within the "war hull" endorsement:

1. Amendment of Terms

The Company may give notice effective on the expiry of seven days from midnight G.M.T. on the day on which notice is issued, to review the rate of premium and/or geographical limits.

2. Suspension by Notice

a. This insurance may be suspended by the Company or the Insured giving notice not less than seven days prior to the end of each period of three months from inception. PROVIDED THAT if the aircraft is in the air when such outbreak of war occurs then this insurance, subject to its terms and conditions and



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provided not otherwise canceled, terminated or suspended, will be continued in respect of such aircraft until the said aircraft has completed its first landing thereafter.

b. Upon the hostile detonation of any weapon of war employing atomic or nuclear fission and/or fusion or other like reaction or radioactive force of matter wherever or whenever such detonation may occur and whether or not the insured aircraft may be involved.

3. Automatic Suspension

Whether or not such notice of suspension has been given, this insurance shall SUSPEND AUTOMATICALLY upon the outbreak of war (whether there be a declaration of war or not) between any one of the following countries, namely, the United Kingdom, United States of America, France, the Russian Federation or the People's Republic of China.

As an insurance buyer, it is important you are informed about the coverages available to you for your King Air. The global aviation insurance community is closely monitoring the war in Eastern Europe. International sanctions, contractual language and insurance coverage carried by lienholders and leasing companies are

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**“It is important to understand the war hull coverage can be triggered anywhere in the world ...”**

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additional factors as we consider the airline equipment that is currently in Russia. If the assets remain in peril, the carriers will have no choice but to make massive payouts, which will have ramifications on all aviation premiums. **KA**

---

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](mailto:kpwhite816@gmail.com)

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# B100 Review and Commentary

by Tom Clements



*Author's Note: The following article comes from a chapter in "The King Air Book, Volume I." It has been abbreviated and simplified here to appeal to more King Air operators.*

**T**he King Air B100 model is unique, as most of our readers know, in that it is the only production model in the King Air series that is *not* powered by a version of the Pratt and Whitney PT6 powerplant. Instead, it is fitted with the Garrett (now Honeywell) TPE331 turboprop engine, similar to those installed on lots of King Air competitors such as Turbo Commanders, MU-2s, Conquests IIs, etc. It is a fine engine with a large following of enthusiastic fans, but it is very different in design and operation than the PT6. The intent of this article is to highlight those differences and to provide some operational tips for pilots of this rare model.

## Model 100-Series History

The King Air 100 model appeared on the market in 1969. It was the first stretched King Air with a cabin that is 4 feet longer than members of the 90-series. The wing, landing gear and empennage for the 100 came from the Model 99 that had been developed a few years earlier.

The 99 is the unpressurized, PT6-powered, commuter airliner that can carry up to 15 passengers. Its wing lacks the extended wingtip (that was introduced on the B90) giving it the same wingspan as the 90 and A90. However, it has a pronounced droop in the leading edge of the center section that allows it to provide a lower stall speed for a given weight. It also has a large stall



King Air B100 with propeller and winglet modifications.



fence on each side midway out between the nacelle and tip. (Later, the F90 would use the same wing shape and size but without the stall fences.)

To accommodate the 15 passengers, the 99's fuselage is quite long and the tail needed to be designed to provide enough control and trim authority to handle a much larger CG envelope. Instead of trim tabs on the elevators, Beech went with a movable horizontal stabilizer ... like that used on a Piper Cub or Cessna 180, for example. However, unlike the Cub and Skywagon, the stabilizer on the 99- and 100-series was so big that moving the jackscrew manually proved to be too difficult. Instead, a system was designed and certified that included both an electric Main and electric Standby trim motor that operate the stabilizer through a clutch/gearbox arrangement such that if one motor fails the other can still function. When one first flies a 100, it is a bit disconcerting to reach for the elevator trim wheel and find it missing! Normal trimming is accomplished through the use of dual switches on the outboard grip of the pilot's or co-pilot's control wheel. Standby trimming is achieved by use of two switches on the

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The power quadrant levers in the B100 changed to being called Power, Speed and Fuel Cutoff & Feather.

pedestal, accessible to both pilots. A trim-in-motion aural tone beeps whenever the stabilizer moves. That, too, is unusual at first but soon becomes expected and almost unnoticed.

The original “straight” 100 model had three-blade propellers, a maximum takeoff weight of 10,600 pounds and fuel capacity was a rather paltry 374 gallons. B-2 through B-89, and B-93 are the 100 serial numbers.

In 1972 the A100 replaced the straight 100, beginning with serial number B-90. For the very first time, Beech installed a four-blade propeller as standard equipment. Fuel capacity went up to 470 gallons, with a highly improved delivery system that, again for the first time, utilized an engine-driven boost pump. Maximum takeoff weight was increased to 11,500 pounds. The last A100, B-247, was built in 1979.

The very first model 100, serial number B-1, has a fascinating history. After being the flight test vehicle used in certifying the aircraft, Beech kept the airplane at the factory in Wichita and used it for additional miscellaneous flight testing. It was next used as the prototype for the A100 certification program and remained at Beech in the flight test department. Finally, in 1976, Beech removed it from the experimental category and re-certified it as a normal category A100 and it was sold to the State of Kansas. N3100K is still shown in the FAA registry. Thus, B-1 was born as a straight 100 but became an A100!

All members of the 100-series exhibit a “big-airplane” feel. They are heavier on the controls than any 90, 200 or 300-series model. They tend to decelerate rapidly in the flare and finesse is required to make consistently

satisfying landings. There’s not much ground effect due to the short wings. Nevertheless, many pilots have come to prefer the solid, stable feel of the 100, A100 and B100. It is a great instrument platform when hand-flying.

## Origin of the B100

In the early 1970s, when the sales of new King Airs were setting records and the production rate was at an all-time high, the Pratt & Whitney factory had a labor/management dispute that led to a long-lasting strike. The result of this protracted work stoppage and the supply of PT6 engines came to a halt. At one time, Beech had over 50 completed King Airs sitting in Wichita with paint, interior and avionics all finished but with lead weights sitting on the engine mounts (to prevent them from tipping back onto their tails) since no engines were at hand. Needless to say, Beech had a severe cash-flow problem, with so much money tied up in those airplanes and no way to collect money from the customers since the airplanes could not yet be delivered.

Frank Hedrick, the president of Beech at the time, decided that it was too risky to have such a large component of the Beechcraft product line dependent upon one sole engine supplier and he instigated an effort to provide another engine supplier for the King Air series. The TPE331 was the obvious choice of powerplant, being about the only other game in town in light turboprop engines.

About a year before the P&W strike, Beech had introduced the Super King Air 200 model. With the same cabin size as the A100 model – that had been the



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## “... the B100 found a ready market among die-hard TPE331 advocates ...”

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top-of-the-line King Air until the 200 came along – but offering a huge performance increase, most potential A100 buyers were being convinced to spend the extra dollars to order a 200 instead. Hence, Beech was seeing a dramatic reduction in the orders for A100s.

It was this fact that led Mr. Hedrick to decide the 100-series would be the first to offer the new powerplant package. By doing so, perhaps some new interest and life could be breathed into this fine segment of the King Air model line. Eventually, however, Mr. Hedrick's plan was to offer the choice of PT6 or TPE331 engines across all branches of the King Air family tree existing at that time: the 90-series, the 100-series and the 200-series.

By the time the TPE331-powered version of the A100 – given the designation B100, of course – was finally certificated and ready for customer deliveries, two years had elapsed and the flow of PT6s was back to its historically high abundance. Although the B100 found a ready market among die-hard TPE331 advocates, it never sold nearly as well as its big brother, the 200. A contributing factor to the lack of strong sales success for the B100, in my opinion, is that the King Air sales team had been so indoctrinated into the “PT6 good, 331 bad” school of thinking that many of the salesmen and saleswomen found it very difficult to sing the praises of this different engine to their prospective buyers.

The outcome of this lack of a strong B100 market is that Beech dropped the idea of offering the alternative powerplant across the board of King Air models. Although the factory did develop and conduct flight testing on a prototype TPE331-powered version of the F90 – it was to be known as the G90 and the prototype's serial number was LE-0, leading the factory pilots to refer to the plane as “Leo” – the program never evolved past the testing stage. I would be quite surprised to ever see another new King Air model that utilizes a version of the 331.

B100s were only delivered over an eight-year span from 1976 through 1983. The prototype started life as an A100, serial number B-205, and was given the new serial number of BE-1. The last one manufactured in

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## “Starting the 331 is a totally different process than starting a PT6.”

1983 was BE-137. All B100s were delivered with 715 SHP (shaft horsepower) TPE331-6-252B engines, all have a maximum gross takeoff weight of 11,800 pounds, with typical cruise speeds of about 250 knots. That speed is 15 to 20 knots faster than the realistic cruise speed of the 100 and A100. Because they have the short wingspan and the rather lowly 4.6 psid maximum differential pressure that is common to all of the 100-series, few B100s spend much time above FL220. Offering the same cabin dimensions of a 200 or 300, yet with significantly less fuel burn and rather good low-altitude speed performance, the B100

has proven to be a popular model among King Air charter operators. Also, it is much more commonly found in the eastern, rather than the western, portions of the U.S. due to its modest single-engine service ceiling.

Some B100s have been converted to the later-designed “Dash 10” version of the 331. These models exhibit increased climb and cruise performance as well as better availability of hot-section component parts. Another popular conversion is the Raisbeck Engineering modification that increases the maximum gross takeoff weight significantly.

As most of you know, the PT6 is a “free turbine” design wherein the Power Turbine (PT) that drives the propeller through the reduction gearbox is totally free and independent from the Compressor Turbine (CT) that drives the compressor. The TPE331, in contrast, is a “fixed shaft” turboprop, wherein all rotating components are fixed together and rotate simultaneously, although not necessarily at the same speed due to reduction gearing. The starter on a PT6 only turns the compressor and does not have to spin the mass of the propeller and gearbox. In contrast, the starter on the 331 must turn everything in the engine. That is why the PT6 gets by with a single battery but the B100 requires two of that same size. It also leads to huge differences in how the engines are started, operated and shutdown.



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Starting the 331 is a totally different process than starting a PT6. In fact, the pilot's left subpanel and the power quadrant are greatly changed between the A100 and B100 models. There are switches in the B100 that were never there before! Instead of *Power*, *Propeller* and *Condition* levers, there are *Power*, *Speed* and *Fuel Cutoff & Feather* levers. Because it is relatively easy to harm the engine due to improper starting procedures – and I would opine that the PT6 is much more forgiving to bad technique than the 331 – one needs to read the POH procedure thoroughly, practice it under the direction of an experienced instructor or operator, and take every care to do it properly.

For the newcomers, you need to practice the proper starting procedure thoroughly, with the battery switch off, until the steps are easy for you. It takes some coordination and practice for the fingers of the left hand to do their tasks well.

### Flight Idle Fuel Flow Check

I have often discovered that the flare-for-landing characteristics of some B100s are less forgiving than desired because the Flight Idle Fuel Flow (FIFF) adjustment is set incorrectly. Perhaps in a misguided attempt to reduce engine starting temperatures, the FIFF is set too low, far below the setting desired by Beech or Garrett/Honeywell. The result is that the airplane “falls

out of the sky” when power is reduced to flight idle. Here is how you, the pilot, can determine if your airplane is meeting the proper FIFF specifications:

Begin this check at 6,000 feet pressure altitude. Configure the airplane for landing – gear down, speed levers fully forward, flaps down. Trim the aircraft for 100-105 KIAS and reduce power levers to flight idle.

Passing through 5,000 feet, check for:

- A. 1,800 fpm descent rate (yes, it seems high but it's correct!)
- B. No adverse yaw
- C. No Beta lights
- D. Approximately 180 pph fuel flow per engine

Record the descent rate and the fuel flow that you observe, then add power and return to normal configuration.

If the FIFF needs to be adjusted, maintenance personnel should turn the adjusting screw on the rear of the fuel control unit clockwise to increase fuel flow (1 click = 2 pph). A *very* rough rule-of-thumb is that each 10 pph fuel flow change will make a 300 fpm rate-of-descent change. Realize that the FIFF setting cannot be verified properly without a flight test being accomplished!



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**“Fewer members of the 100-series ... have been produced than any of the other branches.”**

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### **Engine Inlet Heat**

When the Engine Inlet heat switches are turned on in flight, ITT will rise momentarily then drop to a lower value than originally set. The theory here is that the initial rise is caused by the reduction of cooling airflow as air is bled from the compressor and directed to the inlet, but that the subsequent decrease in ITT is caused by the P2/T2 sensor getting warmer and directing the fuel control unit to reduce fuel flow. If desired, the power levers may then be advanced to regain the original ITT. There is a trap waiting here for you. Namely, when you leave icing conditions and turn the switches off, ITT

will eventually creep well above your original setting unless power levers are retarded. Therefore, monitor ITT carefully and reduce power enough to leave a comfortable margin below the cruise ITT setting when turning off Engine Inlet heat. Remember that +5°C OAT is the maximum value at which Engine Inlet heat may be used. Leaving it on too long when in warm air may lead to compressor rub in the engine!

### **Ballooning with Flaps**

There is a *very* pronounced pitch-up, or ballooning, effect when flaps are lowered on *any* member of the 100-series, including the B100. Here are a few suggestions:

- When selecting Approach flaps while operating near the appropriate airspeed limit of 179 knots, holding the main trim switches in the nose-down direction for 3 or 4 “beeps” of the trim-in-motion aural indicator will nicely balance the pitch-up tendency.
- Another method when lowering flaps to Approach is to reduce power and let the airspeed drop well below the 179-knot limit without trimming, so that the nose is getting heavy, then lower the flaps. Presto! You are right back in trim!



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When changing from 30% to 100% flaps for landing, you may wish to do so in steps ... 60, 80, 100%. Instead of trimming forward (nose down) as they extend, stiff arm the control wheel to maintain the visual glide path and be patient. As the drag takes effect, airspeed will decrease and you will find yourself once again nicely trimmed. During this time do not rush to reduce power. The airspeed will very rapidly decay with full flaps if power is too low! The same torque that gave a stabilized ILS approach with 30% flaps will yield about the same descent angle with 100% flaps at landing speed.

## Fuel Venting

Sometimes B100s (and E90s, F90s, A100s, 200-series and 300-series that have basically the same fuel system) have been known to vent an awful quantity of fuel onto an FBO's ramp or hangar floor. There is a step pilots can take that almost guarantees this event will never happen.

When fuel is being transferred from the auxiliary tank to the main tank, it transfers at a rate greater than the rate at which the engine is burning the fuel. Consequently, the main tank overfills and builds up enough pressure that a relief valve should vent excess fuel from the main tank back into the aux tank. (Although it *should* do that, sometimes a portion of the excess is vented overboard!) When auxiliary fuel transfers to an already-full main tank, that main tank becomes pressurized or overstuffed with fuel. If ever there is a time when fuel venting will occur, this is it.

I suggest, therefore, that you delay turning on the Aux Transfer switches until leveling off at cruise altitude. Doing so will allow the main tanks to come down from their full condition and hence provide some room so that the aux fuel may now be accepted without causing an overstuffed condition.

When conducting wing-bending analyses, the designers assume that the main tanks will be full if the aux tanks contain fuel. That's why the "Limitations" tells you to fill the auxes last and use them first. Nonetheless, taking out 100 or 200 pounds of fuel from the mains before transferring the auxes will not be enough to cause bending concerns unless perhaps you are loaded right up to the maximum zero fuel weight limit. In routine passenger-carrying operation that is very rarely the case.

## The C100

Bet you have never heard of this King Air model, have you? In 1976, Beech decided to add enough power to the A100 to have it perform as well or better than the B100. They accomplished this by replacing the 680 SHP PT6A-28 engines with the 750 SHP PT6A-135 engines, the same engine that was to be used on the F90. Since this was such a simple change (so they thought!) Beech began building C100s before the experimental flight testing was completed. BF-1 was the first serial number and they built eight of them, through BF-8. Well, too

much of a tendency toward tail flutter was uncovered at the higher speeds these engines provided. Rather than take the time and effort and money to redesign and strengthen the tail assembly, the decision was made to shelve the idea and to convert the eight undelivered C100s back into A100s. If one looks closely inside the cowl of the last eight A100s, one will find a "BF" serial number alongside the "B" number!

## Summary

Fewer members of the 100-series branch of the King Air family tree have been produced than any of the other branches. Even the latest 100-series model is now almost 40 years old. For those seeking the same large cabin of the 200 or 300 and yet for a price that is less than many used 90s, the 100-series has developed a devoted following. They are solid, pleasant-handling, fun, flying machines. **KA**

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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](mailto: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](mailto:editor@blonigen.net).

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# Thunder Birds – The Mighty Beechcraft A17 Biplanes

**The Model A17F and A17FS were like no other Beechcrafts ever built – powerful, brutish machines whose high performance was nothing short of spectacular for their time.**

by Edward H. Phillips

**D**espite America's bleak economic situation, Walter Beech and his chief engineer, Ted Wells, held tenaciously to the belief that there was a small, but profitable market for a single-engine, high-performance business aircraft. In 1932, the first Model 17R had proven that such an airplane could be built, but would it sell? Time would tell. Undaunted, Beech also offered the Model 17 airframe mated to a Wright "Cyclone" air-cooled, radial engine and dubbed the combination the A17F.

As 1933 drew to a close Walter Beech and his infant airplane company had sold one airplane – the second Model 17R built – and had orders in hand for two additional aircraft. Unlike the first Beechcraft, however, these two machines were to be powered by fire-breathing, nine-cylinder Wright Cyclone radial engines. The first ship built, the Model A17F, mounted an R-1820F11 rated at 690 hp; the second, the A17FS, was equipped with a supercharged SR-1820F3 engine that produced an earth-shaking 710 hp.

Advertisements for the powerful Beechcraft had caught the attention of a company in New England. The first A17F was ordered by the Goodall-Worsted/Sanford Mills company to fly corporate officers to its various clothing factories operating in several states. The second ship had been ordered and was designed specifically to compete in the MacRobertson International Trophy Race scheduled for 1934. The grueling, 12,000-mile route would begin at London and end at Melbourne, Australia.





Beech Aircraft Company built the muscular A17FS to compete in the 1934 MacRobertson race from London, England, to Melbourne, Australia, but it was withdrawn when financing failed to materialize. Powered by a 710 hp Wright Cyclone radial engine, the bullish Beechcraft served briefly with the U.S. Department of Commerce before it was bought back by Walter Beech and disappeared from the aviation scene.

(University Archives and Special Collections, Wichita State University Libraries)



Walter Beech and Ted Wells believed that an airplane's strongest asset was its speed, and the bullish A17F had speed in spades. Capable of more than 220 mph, in its day it was a flying machine of the highest caliber. Sold to the Goodall-Worsted company in 1934, the ship was later owned by Howard Hughes but in 1942 met its fate in a hangar fire.

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Beech Aircraft Company completed the A17F in May 1934. It was the ultimate single-engine, four-place business airplane of the mid-1930s and could attain a maximum speed approaching 220 mph – a speed that placed it in the same class with only a few military or commercial airplanes of the day. To feed the thirsty Cyclone powerplant the A17F's fuel tanks held 155 gallons; the A17FS would hold even more.

The aircraft was delivered to Goodall-Worsted pilot Robert Fogg on May 27. The airplane's interior was plush, luxuriously outfitted with Goodall-Worsted velour and mohair fabrics made by Sanford Mills especially for the aircraft. As a final custom touch, the company had the Beech factory paint the words "Tailored by Goodall from the Genuine Cloth" on both sides of the aft fuselage. Priced at \$24,500, the bullish biplane was resplendent in its glossy black and red paint scheme trimmed in cream to match the interior. As the A17F departed that day from the old Travel Air field in East Wichita, Fogg knew he was flying one of the world's fastest biplanes, and speed was its most salient characteristic.

As he flew eastward to the company's headquarters in New England, the big Beechcraft drew attention wherever it landed for fuel. After arriving in Boston late that day, Fogg wired Walter Beech expressing his admiration for the mighty A17F, "Breakfast in Wichita, dinner in Boston and headwinds all the way. Congratulations on your latest masterpiece – the world's finest aircraft. Progress demands creation rather than imitation, and you have achieved it again." Despite Fogg's praise for the speedy ship, after only one year in reliable service to the company, the vagaries of an economic depression forced Goodall-Worsted to sell the A17F to the Hughes Tool Company.

The ship was later bought by race pilot Robert Perlick and prepared for competition in the 1937 Bendix Trophy race. Unfortunately, during the takeoff roll the heavy weight of fuel caused the landing gear to collapse and Perlick was out of the race. He tried again in 1938 and was poised to win the event when the Cyclone engine went silent due to fuel starvation. To add insult to injury, in 1944 the Beechcraft met its end in a hangar fire.

As for the A17F's more powerful brother, the A17FS, its career was short-lived and uneventful. The airplane was completed too late to enter the MacRobertson race. The many promises of support and money made by Wichita businessmen and other people were not forthcoming and the situation was further compounded by the high cost of shipping the biplane to England. Louise Thaden, who was chosen to pilot the A17FS on its epic journey, estimated the cost of logistics to support the ship during the race would be at least \$8,000, including the cost of shipping the disassembled Beechcraft to London. Further costs would be incurred to reassemble, fly the airplane and prepare it for a journey that promised to be fraught with more than its share of risks.

With his hopes of racing glory dashed to the ground, Walter Beech suddenly had an expensive "hangar queen" ➤



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on his hands to the tune of about \$25,000, money his infant airplane company was desperate to recover as quickly as possible. Undeterred, Beech began a vigorous campaign to sell the orphaned airplane. As the weeks passed, Walter grew increasingly irritated. Despite his best sales efforts, no serious buyers stepped forward to acquire the massive A17FS. In 1935, however, Walter finally found a willing and able buyer – the United States government’s Bureau of Air Commerce. The agency planned to have its aviation inspectors fly the airplane on inspection tours around the country.

After a series of modifications demanded by the Bureau were completed, the Beech Aircraft Company finally delivered the aircraft in July 1935. The Bureau’s pilots were awed by the ship’s power and speed, but those virtues also led to frequent repairs to the welded steel tubing that suffered from vibrations and cracking. In addition, the Wright Cyclone gulped fuel at an alarming rate that soon began to put a dent in the agency’s aviation budget.

The Bureau continued to operate its unique but controversial airplane for about one year before its high operating and maintenance costs could no longer be ignored. Despite the airplane’s drawbacks, Bureau officials initially decided to retain the Beechcraft. They eventually changed their minds, and in June the A17FS was flown to Cincinnati, Ohio, and relegated to a dark

corner of a hangar to await its fate. These issues, coupled with the availability of new, more modern and fuel-efficient airplanes, led the Bureau to strike the A17FS from its fleet inventory in August 1936.

Although the reason remains unclear nearly 80 years later, Walter Beech bought back the ship from the Bureau and in August it was retrieved from the hangar and shipped to the Wichita factory. Its exact fate remains a mystery, although rumors persisted for years that Walter eventually resold the airplane to a buyer in California. Another possibility is that Beech had the aircraft dismantled and destroyed to prevent further use.

It is undeniable, however, that the A17F and A17FS were unique airplanes, the “sui generis” of their time. Not only were they the most powerful Beechcrafts built until the advent of World War II, but more significantly they were created as hand-crafted flying machines fabricated during the “Golden Age of Aviation.” Yet, Walter Beech’s “Thunder Birds” with their bellowing Cyclone radials will never be forgotten. They appeared on the aviation scene only briefly, but unlike any Beechcraft before or after them, they made a lasting impression on those pilots fortunate enough to experience the sheer thrill of flying airplanes that had no equal. **KA**

*This article was previously published in the January/February 2010 issue of King Air magazine.*

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### Garmin announces TXi EIS for select Beechcraft King Air 200 aircraft

Garmin® International, Inc. recently announced that expanded engine monitoring capability is now available for select Beechcraft King Air 200<sup>1</sup> aircraft with the addition of the TXi™ Engine Indication System (EIS) display. King Air 200 owners and operators will benefit from the TXi EIS with features like engine timers, exceedance recordings, dynamic engine indications, as well as wireless data logging, which combine to reduce pilot workload, improve engine efficiency and reduce maintenance costs.

#### Enhancements and capabilities with TXi EIS

King Air 200 series owners and operators can now replace aging and costly-to-replace EIS gauges with a

modernized display and view EIS information on a dedicated 7-inch TXi flight display in portrait mode. This upgrade simplifies the cockpit and allows pilots to read and analyze critical engine and fuel parameters more clearly. When using multiple TXi displays, pilots can also benefit from display backup capability to help prevent the loss of PFD or EIS information during a single-display failure.

#### Clearer engine indications for easier operation

All TXi EIS gauge indications display real-time turbine engine information using distinct colors, bands and radials to clearly depict normal operating ranges as well as limitations so pilots can more easily interpret engine data at a glance. Additional standard gauges include oil pressure and temperature as well as fuel flow and electrical system status.

#### Limit timers and exceedance recordings

Utilizing gauge limit timers, TXi EIS helps pilots maintain the engine within its allowed limits to avoid engine exceedances and as a result, costly maintenance procedures. For example, once a preconfigured limit is exceeded, a countdown timer is displayed alongside the engine gauge. This timer is an indication to the pilot that they need to mitigate the exceedance. If the time-based limit is exceeded, the timer and gauge limits begin flashing and the pilot receives a notification that an exceedance has been recorded. Simultaneously, the TXi EIS system automatically logs a variety of information, including the parameter that was exceeded, duration, highest value that was recorded, time, date and more. The pilot can then review the logged




data and share it with maintenance professionals for post-flight analysis.

#### Add precision to fuel planning

Pilots can more precisely monitor fuel calculations with TXi EIS, which includes an integrated fuel computer. After making a fuel stop, pilots can enter the fuel data within TXi EIS by selecting "full fuel" or by adding a specified amount in pounds, gallons, liters or kilograms. When airborne, the system monitors fuel flow and GPS information to estimate fuel range, endurance and how much fuel is expected to be available at the destination airport.

#### Wireless flight data logging

To assist with tracking maintenance activities, controlling operating costs and analyzing overall engine health, built-in engine data logging is included with TXi EIS. Aircraft performance, engine data and any exceedances that are recorded during a flight are automatically stored on an SD card (sold separately) in the display. When the TXi EIS display is paired with the Flight Stream 510 wireless gateway, information is wirelessly transferred and stored within the Garmin Pilot™ app and automatically uploaded to the flyGarmin® website. Engine and flight cycles are also recorded to help identify aircraft systems that depend on those limits, such as pressurization systems and other life-limited parts.

The Beechcraft King Air 200 is the latest addition to the growing list of approved turbine aircraft for TXi EIS, which includes the King Air 90. For additional information, visit [garmin.com/TXi](http://garmin.com/TXi) or contact a local Garmin authorized dealer. 

1. Models include PT6A-41 and -42 engines and retrofitted PT6A-42, -52 and -61 STCs; dedicated GDU 700P required



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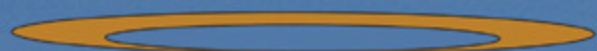
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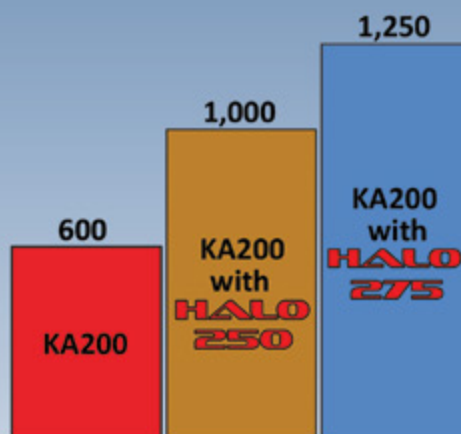
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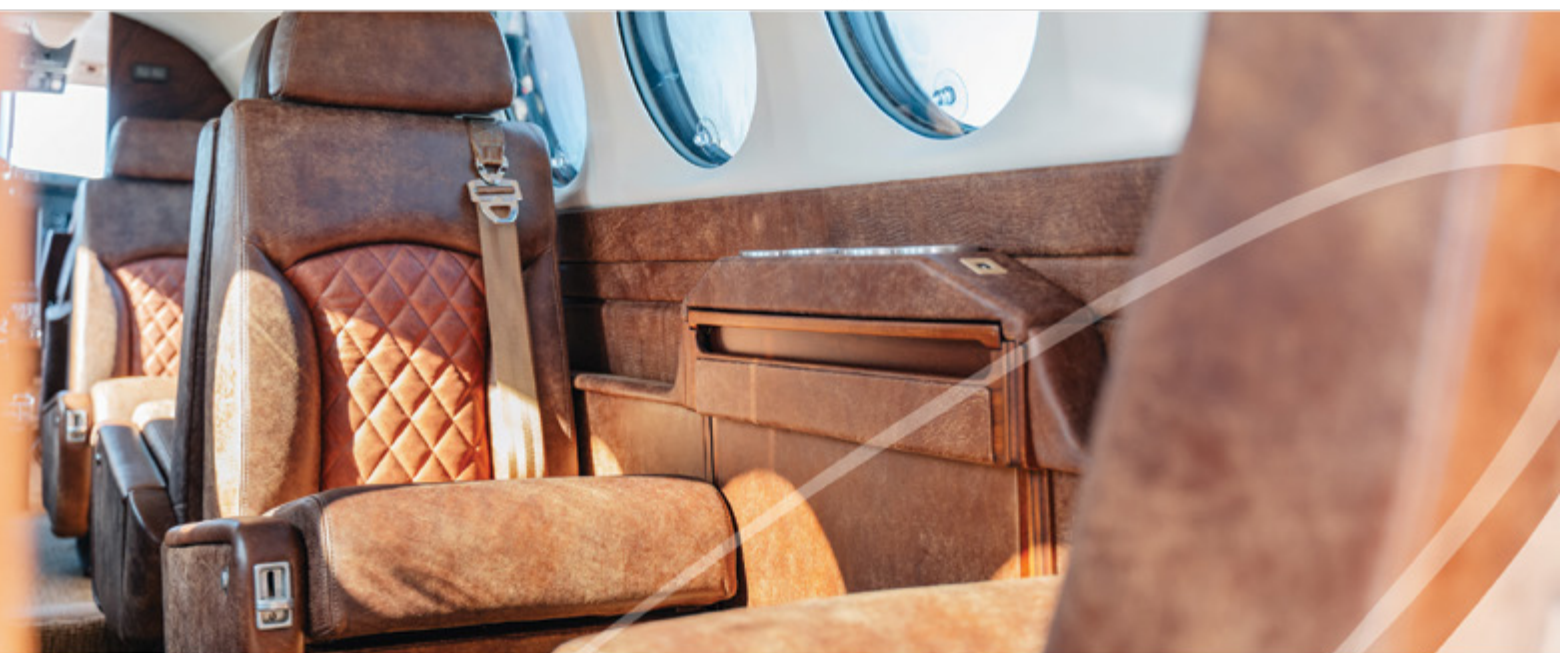


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