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# Seeing Things Higher Perspective

## Zeusch Aviation Finding Broad Versatility

by Guy Warner



*Editor's Note: One of the newest King Air operators in Europe is also one of the most dynamic and ambitious. Managing Director Herman van Kranenburg wants Zeusch Aviation to become the largest King Air operator in Europe, summarizing he said, "As long as we have enough business, we will buy extra King Airs." Guy Warner visited Zeusch recently to find out about its current ops and future plans.*

Zeusch Aviation's Managing Director Herman van Kranenburg says the company is actively considering other missions for their company, which would mean more King Airs.

# from a ctive

## ty with the King Air



Zeusch Aviation's King Air B200 G-MEDZ flies medevac and charter flights. The company plans to broaden its medevac services and is in discussions with other ambulance services and hospitals across Europe to provide more ambulatory flights, as well as transporting organs for transplant.

**T**hough it began commercial operations in 2018, Zeusch Aviation's roots go back to 2010 when Dutch internet entrepreneur (and 747 captain) Con Zwinkels bought an Extra 300 aerobatic monoplane, essentially for his own use but also as a marketing tool. It was kept at Lelystad Airport. By 2013 he realised that he needed a larger aircraft for personal and corporate use. He asked the highly experienced aviation engineer and consultant, Herman van Kranenburg, to source one for him, which proved to be a Beechcraft King Air C90A, and at that time was U.S. registered as N104AJ. The aircraft was upgraded with a Garmin glass cockpit, Raisbeck Engineering four-blade propellers to increase engine efficiency and dual aft body strakes to enhance platform stability.



In April 2019, King Air C90 2-ZEUZ took its first flight in support of broadcast coverage, acting as a signal-relay aircraft for live television coverage of a bicycle race in Holland. It can also be configured for charter operation

An onboard technician uses a relay monitor located on the King Air C90 and works closely with the flight crew and the director on the ground to provide continuous live coverage.



The next few years the King Air wasn't really being used until Herman was asked to draw up a business case for using it in the role of aerial relay communications. This was approved by Con and an extensive modification package was drawn up with Gama Aviation in the UK and ASI Innovation in France. The mission-specific fit included the installation of 18 communications and microwave antennae under the wings and fuselage, and a rear-mounted, two-metre, deployable-in-flight, low-drag mast that would be the main means of the transmission of video and audio signals. A small camera fit was also added to monitor the deployment of the mast and to check for any problems such as icing and possible vibration. Two of the seats would be removed to facilitate the installation and dismounting of a purpose-built and certified equipment rack.

In late 2016 Con asked Herman to become the full-time managing director and accountable manager of Zeusch Aviation at Lelystad, with a specific brief to

establish it as a profitable, diverse and expansion seeking company, which Herman accepted with a starting date of April 2017.

Following the completion and certification of King Air C90 2-ZEUZ (previously known as N104AJ) in April 2019, Zeusch undertook its first flight in support of broadcast coverage, acting as a signal-relay aircraft for live television coverage of a bicycle race in Holland.

Working with the Dutch media technology company NEP, with which it has a five-year contract, it supported the live television coverage of the Volta Limburg Classic single-day bicycle race. The aircraft flew above the route as live images were captured from the ground, relaying them to a base station, which immediately sent the footage to the outside broadcast vehicle. The NEP press release noted, "Antennas on the underside of the fuselage and wings captured the images and relayed them to NEP's ground station. The Zeusch aircraft formed an integral part of the broadcast team, working alongside two motorcycles tracking the race and a helicopter filming the event. With the start and finish of the race in Eijsden [Netherlands], just south of Maastricht, the Zeusch Aviation aircraft flew a circular route above the race for the three-hour broadcast. One of Zeusch's first officers, Boudewijn Schaapveld, added, "Our mission is to act as a satellite for the camera operators on the ground and in the helicopter, as we provide an aerial bridge between the film crew and the director. The operational capabilities of the King Air make it the



perfect aircraft for the relay role. Its endurance, flexibility, electrical power and capacity to fly for up to five hours at a time, support the requirements to conduct reliable relay missions. The onboard NEP technician works closely with the flight crew and the director on the ground to give the best, continuous live coverage. Cloud covering does not disturb the transmission but developing weather systems and the surrounding terrain can make for stimulating flying. In order to stay focused, the captain and first officer swap jobs in the handling pilot and communications roles every 15 minutes. At all times flight safety is of the utmost concern and the captain's word is final."

Another 10 sporting events were booked by NEP for 2019, taking the King Air to several European countries, including the Hammer Race, a three-day cycling event in Norway. In 2020, a major task will be the Arctic Rally, beyond the Arctic Circle. The contract with NEP is non-exclusive,

allowing Zeusch to work with other broadcast companies. The possibility of purchasing a second C90A for conversion to relay work is being actively considered or possibly adapting the other C90A Zeusch currently owns.

A close-up view of the low-drag mast located at the rear of King Air C90 2-ZEUX that transmits video and audio signals back to a broadcast ground station. (photo credit Guy Warner)



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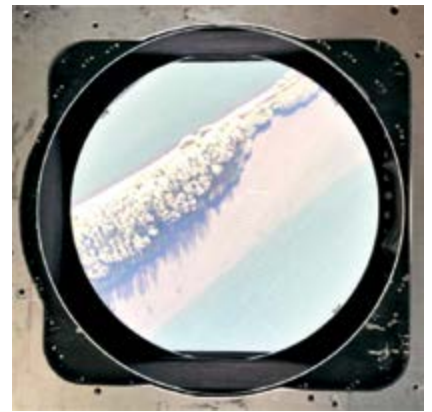
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While 2-ZEUS was being converted, Herman did not rest on his laurels. A second C90A was purchased, registered as 2-MAPZ. A glass plate 50 cm square aperture was installed in the ventral position to allow for the operation of gyro-stabilised mapping cameras. Herman commented, "Maps are important for organizing, maintaining and publishing the geospatial baseline of an area's topography, natural landscape, built environment and more. King Air C90A 2-MAPZ is a superb platform for accurate data collection for detailed map creation. We are currently working across Europe with the German company Geofly, Get Mapping in the UK and the Belgian concern, Eurosense." He continued, "This area of work has huge potential for a wide range of sensors and is by no means limited to Europe. Recently, a Zeus crew was sent to Dubai to fly special missions measuring heat radiation. The mapping season in Europe extends from April to September

before the seasonal lack of clear weather and lowering angle of the sun brings operations to a close. We are actively exploring opportunities in the Southern Hemisphere during the northern offseason. Our aircraft, 2-MAPZ is nicknamed 'Borat' as we sourced it in Kazakhstan before it underwent our modifications package." The first mapping mission was undertaken in June 2018.

Even as the second King Air was undergoing conversion, a third was purchased in March 2018. This was a larger King Air, a B200 (G-MEDZ). As well as being fitted with similar avionics, propellers and strakes modifications as the two C90As, the new aircraft came with BLR winglets, which increase fuel efficiency by 4-5%. Mission-specific equipment for an air ambulance role was added – a Lifeport PLUS-system incorporating a stretcher for a single patient, as well as high-tech medical equipment including compressed air, a vacuum system,



A photo taken from King Air C90A 2-MAPZ by a gyro-stabilised mapping camera through the 50 cm square aperture that was installed on the aircraft.

a triple outlet 1,000-watt inverter and a 3,500-litre oxygen system. Additional role-specific equipment can be added, administered by up to two clinicians, depending on the level of patient care required. In this medevac role, Zeus works in partnership with IAS Medical, the UK-headquartered private air ambulance company, which holds



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TEXTRON AVIATION



For two months during the summer of 2019, G-MEDZ was based in southern port-city Malaga, Spain, transporting patients between Melilla (a Spanish enclave located on the north coast of Africa) and Malaga.

the Aircraft Operator's Certificate (AOC) on which the aircraft presently operates. The initial services were flown early in 2019, a poignant mission being the repatriation of a terminally ill patient whose last wish was to pass away in his home country.

For two months during the summer of 2019 the aircraft was based in Malaga, a port-city in southern Spain, working for the Spanish aviation organization Eliance. Herman noted, "Our King Air B200 has transported 45 patients between Melilla and Malaga. Patient care was administered by a local professional medical team during the 30-minute flight." Melilla is a Spanish enclave located on the north coast of Africa, sharing a border with Morocco. It has a population of approximately 86,000 and is served by three small hospitals that provide limited health care.

He continued, "The Zeusch flights were invaluable, flying patients to ground ambulances in mainland Spain, which then transferred patients to clinical centres of excellence. We were proud to be part of this special operation which was literally lifesaving in some cases – especially for triplets born 14 weeks early. These flights not only show the need for specialized equipment and well-trained personnel, but also highlight the capabilities of our King Air B200. Most importantly it also demonstrates the importance of cooperation between entities to fulfil a specific mission. This has enhanced our operational expertise and provided an excellent platform for expanding our medevac operations, which we anticipate will widen out across Europe over the next year."

Discussions are in hand with three Benelux ground ambulance companies and also with Lelystad Airport management regarding providing ATC and emergency

**"The reliability, flexibility and functionality of our King Airs make them classic designs. They are our aerial SUVs and can fly into over 6,000 airfields in Europe alone."**

Herman van Kranenburg  
Zeusch Aviation Managing Director

cover for organ transport flights. Organ transport requires timely pickup and delivery to prevent deterioration, with a major transplant hospital being located not far away at University Medical Centre Groningen (UMCG).

Under the same AOC, G-MEDZ is also available for charter flights, seating up to eight passengers in a comfortable executive-style interior and can be changed to this configuration in two hours. King Air C90 (2-ZEUS) is also a possibility for charter flight carrying up to seven people and again can be swiftly transformed. It is planned to have the B200 adapted for a third role by the installing a large 75 cm camera aperture. This would not only broaden the client base but also allow for an ever-developing range of cameras to be used. Herman adds, "The reliability, flexibility and functionality of our King Airs make them classic designs. They are our aerial SUVs and can fly into over 6,000 airfields in Europe alone."

Looking ahead, the company has just purchased a fourth King Air, a B200, which already has a mapping aperture, Lifeport system and charter interior. It will be re-registered and upgraded with the same modifications as the other King Airs and is expected to be operational in the first half of 2020. Also, in 2020, Zeusch will bring its growing fleet under its own AOC.

Expansion of the Zeusch footprint at Lelystad is in hand, with the recent purchase of a 2,000 square-metre hangar, more than doubling the size of current facility. Lelystad is the largest general aviation airport in the Netherlands, however, on 7<sup>th</sup> November 2019, it will become a fully controlled civil airport in anticipation of which a large new passenger terminal has been constructed. It is expected that the authorisation of scheduled services being transferred from Schiphol (which is at its maximum allowed aircraft movements) will commence in 2020. Schiphol is the main airport in the Netherlands and is a short drive from Lelystad, making it an excellent alternative for those looking for a more passenger-friendly experience.

Other missions for Zeusch are under consideration and ongoing discussion with the relevant government bodies include surveillance flights for the military, law enforcement and other observers of activities on land and water, as well as calibration of airfield navigational and landing aids. The installation of suitable surveillance equipment is regarded as being fairly straightforward,



using the Avcon Industries' King Air Special Mission pod. Another plus factor is that the experience already gained of the precision flying required for mapping and relay flights, feeds directly into the skillset needed for surveillance and calibration tasks.

The legal framework is also under development for a shared ownership scheme, allowing private customers to purchase equity in the King Airs. Herman describes it as, "You get the benefits of part-owning an aircraft without the challenge that comes with managing it. Owners will have portal access allowing them to view availability of the aircraft and to schedule flights using a real-time system developed by Schedaero. Then we handle every trip detail from catering to maintenance. A unique feature of our program is that the pilots and crew are all Zeusch endorsed. You get the same aircraft, same staff and a team operating to the same high standards, every time you fly. The benefit is consistency, trust and familiarity – just as if you bought your own aircraft."

Zeusch is a lean organisation, with just six fulltime staff, three in the office – a flight operations manager and two first officers. There are 10 freelance captains and eight monitoring pilots, though a staff captain will soon be appointed. The business model aims to have each aircraft flying at least 400 hours per year, with all flight crew being current on both types of King Air

aircraft. Opportunity is also given for enhancing flying qualifications and progressing to aircraft captaincy.

Having spent some time at Lelystad with Zeusch, I was left with the impression of a very friendly, committed, enthusiastic and knowledgeable staff, who, importantly, like working together. Con Zwinkels has a mantra, "Once it starts looking like work, you should really be doing something else for a living." He has a light touch, meeting Herman once a fortnight to discuss everything, but otherwise empowering the staff with trust, freedom and responsibility. **KA**

*Grateful thanks are due to Herman, Martha, Boudewijn and Yvette for their hospitality and help with this article.*

---

Guy Warner is a retired schoolteacher living in Carrickfergus in Northern Ireland. He has written more than 30 books on aviation, military and naval topics and is working on several more. He has contributed articles to many magazines in Ireland, the United Kingdom and the United States. Guy has also taken part in several radio broadcasts and TV programmes on the subject of aviation and naval history, reviews books for a number of magazines, gives talks to local history groups and other societies throughout Britain and Ireland and has acted as a consultant to the Royal Air Force, museums, local authorities and universities.



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# King Air Gathering IV

## From a First-timer's Perspective

by Joe Casey

It was with great interest that I attended King Air Gathering IV, hosted by the King Air Academy in September at Fredericksburg, Texas. As an active, general aviation instructor and FAA Designated Pilot Examiner, I usually get to be the trainer instead of the trainee, so this was going to be of particular pleasure for me. As we used to say in my military days, I looked forward to “being in receive mode.”

As a side note: Fredericksburg is splendid. The Texas “Hill Country” around Fredericksburg is one of my favorite parts of the world. Besides the rolling hills and stately live

oak trees, an added bonus is the Gillespie County Airport (T82), home of the Hangar Hotel and Airport Diner, both of which are singularly outstanding venues. I frequent T82 as often as possible during cross-country training events because I love on-airport restaurants, and the Airport Diner is one of the best.

So, with an excellent venue, I hoped the King Air Gathering would provide other benefits. I do think being a part of the “safety culture” of your particular type of airplane is an important part of being a responsible pilot. Simply put, there



Some attendees of the KAG stayed at the Hangar Hotel, which made it convenient as the Conference Center was where the Gathering was held. The Airport Diner is also located on the grounds and comes highly recommended.

needs to be a passionate group of people that believe in the airplane type, who want to see that airplane flown in a safe, efficient manner by the aircraft's pilots. Where does one find that core group with the King Air? I did not know and that is probably the biggest reason I wanted to attend the King Air Gathering ... I wanted to get “plugged in” to the community.

I'm one of the leaders in the Piper PA46 OPA (Owners and Pilots Association), so I know how important it can be. There are lots of OPAs in the U.S., and the PA46 has one of the most passionate and cohesive organizations called the Malibu M-Class Owners and Pilots Association (MMOPA). As an integral part of that crowd, I know the good work done by MMOPA concerning the three pillars upon which it stands: safety, advocacy and community. We have a fabulous convention each year, a great cadre of instructors, a maintenance community that knows the nuances of the airplane, a vendor population that is passionate about supporting the owners, and many safety initiatives. Aside from

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annual recurrent training required by the insurance industry, MMOPA has collective training opportunities too. And, all of this training is required to advance up the ladder of pilot awards in the Master Aviator Program, a tremendous safety initiative founded and funded by MMOPA. Bottom line ... the MMOPA community, like many other OPA communities is working cohesively and moving the safety needle.

Where does all of this collective training, maintenance information, vendor support and shared data exist within the King Air community? Heretofore, I did not know. I receive

great recurrent training each year, but that is individual training focused on systems knowledge, emergency procedure training and IFR flying skills. I have a maintenance provider that does a good job of keeping our B100 and 300 in tip-top shape, but where does one find data on the latest avionics gizmos that can be bolted onto the airplane? Where do you find the newest upgrades to the interior? Who can I talk to that knows the true benefits realized by new STCs? Where can I talk to another B100 or 300 pilot to find out if they are having the same operational challenges that I experience? I found answers to those questions and many more at the King Air Gathering.

Want to know the latest and greatest upgrades to make your King Air better? All the major vendors supporting the King Air fleet were in attendance at the King Air Gathering. Along the periphery of the Hangar Hotel Conference Center were vendors that make the King Air better. The leaders of companies that sell auto-throttles, engine upgrades, window replacements, avionics upgrades, LED lighting, engine trend data management, and just about any other possible upgrades, were available for face-to-face talks. Pratt and Whitney and Textron were well-represented with knowledgeable staff and sample products. For those who might think this is all “just a bunch of sales talk,” they are right. But, make no mistake, any aircraft type needs a host of solid vendors that are healthy and strong to provide upgrades that make the airframe viable for the future. You show me an airframe type without

good vendor support and that type will soon be headed for the boneyard. The vendor support at the King Air Gathering was exceptional, and that is a strong testament for the longevity and strength of the King Air fleet. I spoke with several vendors about their opinion of the benefit of the King Air Gathering and all stated the King Air Gathering is the one annual event they simply will not miss.

The speakers at the King Air Gathering were really solid, too. I enjoyed hearing from those who are the best in a particular area of expertise. Subjects such as weather, medical retention, and checklist use were enjoyable and beneficial but, to me, the two speakers that were a goldmine of information were Tom Clements (consultant to the King Air Academy and columnist in this magazine) and Robert Winchcomb (Pratt & Whitney (P&W) representative).

I'm not sure if there is a King Air pilot that hasn't read “The King Air Book” by Tom Clements. I keep a copy onboard the B100 I operate and it has been a windfall of help to me over the years. I had not met Tom before the King Air Gathering, but I was totally blown away by his ability to stand before a crowd and tackle question after question in a totally professional manner. His knowledge of the various King Air airframes is astounding. Tom is a true gem to the King Air community and I now see why his name is synonymous with excellence to those that love the King Air. I so enjoyed Tom's presentation and style that I pulled him aside for a private talk later

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Vendors who have products/services to improve the King Air experience exhibit at the King Air Gathering. All there to answer specific questions you may have and highlight their offerings.







The author's King Air B100 (N139JB) parked among the other King Airs on the ramp at Gillespie County Airport (T82) in Fredericksburg, Texas, location of KAG IV.

in the day. He graciously gave me 15 minutes of his valuable time, and I cherish the memory of that talk, knowing I'm far better for having been in the presence of a King Air virtuoso.

I'm not sure how many hours I have sitting behind PT6s, but it is enough I feel like I'm capable of operating the PT6 with excellence. I expected little from P&W's Robert Winchcomb as he took the podium to tell us about the PT6 engine, but he quickly dispelled any thoughts I might have conjured of the irrelevance of his presentation. He did a super job of assuming the general PT6 knowledge of the crowd, not making the talk a boring sales lecture, and targeting the nuances of the operation and management of the PT6s on the King Air fleet. I learned a lot from his lecture, but also gained more from talking with Robert during an afternoon break. His knowledge of the PT6 is amazing and he relays that knowledge as a master trainer.

While the vendor support was excellent and the speakers were informative, I felt the best part of the King Air Gathering was the ability to talk with other King Air pilots. During the breaks, it seemed that pilots of particular airframe types would gravitate to each other for discussions of "best practices" and personal experiences. Several times I ventured out to the flight line with a new friend in the form of another owner/pilot to see their airplane and learn about various aspects of their operation. Those discussions proved to be instrumental to my growth as a King Air pilot.

An oftentimes forgotten critical ingredient in a great aviation event is the local FBO. The professionals at the Fredericksburg FBO figured out how to park an enormous amount of King Air aircraft on a ramp that didn't initially appear that it would hold a flock of King Airs. The line guys were exceptional, the front desk personnel outstanding, and the whole operation was obviously well-led. And, they did all of this work without charging any fees. I believe most of the pilots realized how good the Fredericksburg FBO was during the King Air Gathering and supported them with fuel purchases.



The King Air Gathering was kicked off by a short welcome from Ron McAlister, founder of the King Air Academy who started and coordinates the King Air Gathering.

The Fredericksburg airport is well run and exemplifies what other airports in the U.S. should strive to be: no fees, top notch service and great facilities. I knew T82 was a special place and the whole airport, including the Fredericksburg FBO, showed the King Air Gathering participants why.

Next year the King Air Gathering will be in Wichita, Kansas – home of Textron, where all King Air aircraft are built. I anticipate that King Air Gathering V, in 2020, will sell out quickly and be a super event. I'll be booking my seat early and I suggest you do too. The King Air Gathering is certainly a must-attend event for any pilot desiring to plug in to the developing safety culture of the King Air, as well as connecting with the King Air community overall. **KA**

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Joe Casey is an FAA-DPE and an ATP, CFI, CFII (A/H), MEI, CFG, CFII, as well as a retired U.S. Army UH60 standardization instructor/examiner. He manages and operates a King Air 300 and B100 and is an active instructor for the PA46 and King Air models. He has accumulated 14,300-plus hours of flight time, with over 5,200 dual-given as a flight instructor. Contact Joe at: [www.flycasey.com](http://www.flycasey.com), by email at [joe@flycasey.com](mailto:joe@flycasey.com), or by phone at (903) 721-9549.

# Exploring the Limits of Flying Under Part 91

by Rob Mark

**W**hen you were a kid, or maybe even later in life, someone you trusted probably cautioned you about opportunities that look too good to be true; sometimes they are. That kind of advice usually focused on promised riches in exchange for relatively innocent commitments of time or resources. As pilots and aircraft owners, we're way too smart to fall for promises like that; or are we?

Everyone that owns an airplane wishes it was less expensive to maintain. That's one reason some owners lease their airplanes to a

local flight school, flying club or charter company, where they're guaranteed a flat hourly cash flow that, when costs are extracted, might help eke out a small profit.

And just in time to shine a fresh light on this kind of venture, Uber-like aircraft ridesharing, flight sharing and air taxi companies like Flytenow, AirPooler, Blackbird, SkyRyde and FlyOtto have appeared, trying to demonstrate the flexibility of general aviation aircraft to passengers in need of transportation between cities unserved by air service of any kind.

In 2013, Flytenow and AirPooler were created to connect private aircraft owners with people in need of a ride to a destination that a random pilot might be headed toward, with the idea that they'd share the cost as allowed under Part 91. The Federal Aviation Administration (FAA) didn't look too kindly on these ventures and decided they were not really ride-sharing, but actually just a commercial operation wrapped up in a fancy new website, despite these two companies claiming they had no profit motive. By early 2017, the legality of flight and ridesharing nearly made it to the Supreme Court of the United States, but not quite. Lower courts ruled with the FAA against the concept, and both companies evaporated into history. Ridesharing proponents saw the ruling as a slap down of the emerging Uberization of light airplane flying, while critics called it a first step by regulators to protect the flying public from unqualified commercial carriers.

More recently, FlyOtto and SkyRyde have appeared, attempting to direct short-haul passengers to aircraft they represent for direct connections; although SkyRyde isn't quite ready to open its doors just yet. The difference between 2013 and now is that in the case of FlyOtto (flyotto.com) the company acts as a middleman between potential passengers and legitimate charter operators operating under Part 135 commercial carrier rules called "commuter and on-demand operations" by the FAA. The goal is to simply direct more business to companies that already operate general aviation airplanes. FlyOtto doesn't hold itself out as a Part 135 operator which it is not. It



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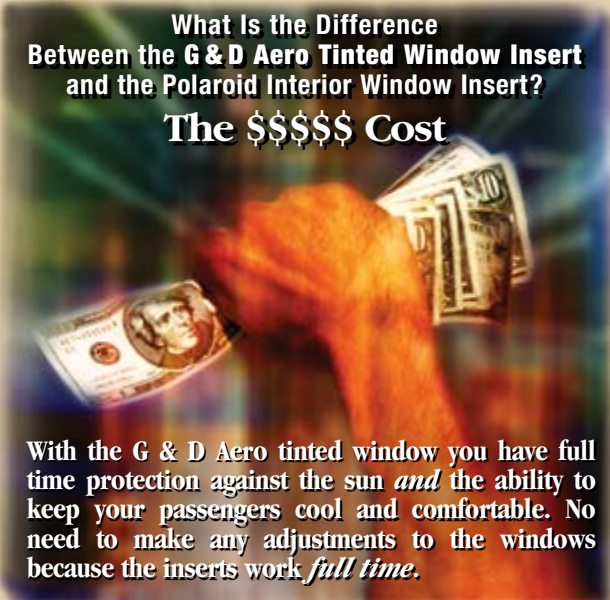
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merely points people through its smartphone app to companies able to legally provide charter services using small aircraft. Once SkyRyde earns its FAA operating certificate, it intends to become a Part 135 operator and accept money for its services.

There's one more company, Blackbird, that on the surface seems similar to FlyOtto and SkyRyde but demands more due diligence on the part of an aircraft owner thinking about handing over their airplane for lease. Head over to the Blackbird website (flyblackbird.com) and you'll see the company promotes using "Blackbird to discover how flying can be more affordable than driving." Who among us wouldn't buy into that idea? Blackbird even employs a slick new smartphone app to speed the connection process. The company is currently operating along the West Coast, but soon expects to begin flying along the East Coast of the U.S. Part of Blackbird operates under Part 135, but not all of it. It's that portion operating under Part 91 that has caused skeptics to turn a closer eye; not so much at what Blackbird is trying to do, but how they're trying to do it. Part of Blackbird's plan encourages general aviation aircraft owners to lease the company their airplane to be used in regular operations.

During these kinds of investigations, the phrase "holding out" regularly pops up. It's a phrase operators use to define their company's goal ... "to provide air carrier services to the flying public," being an abbreviated example. Blackbird doesn't hold itself out as a carrier, at least not at first glance. The company calls itself only, "an online marketplace that connects small aircraft, commercially-rated pilots, and people who are looking for an easy way to find them. Based on their desired route, people can rent aircraft and contract pilots to create their own itinerary. We [Blackbird] provide the platform to make that happen."

Like a swim in the Great Lakes, a deeper dive means encountering places where the waters become murky. FlyOtto's sole mission is to connect passengers to local charter operators who already operate single and light twin engine airplanes under Part 135. SkyRyde's CEO JB Adkins said, "If we were to try and emulate Uber's business model, which I think a lot of these aviation startups are doing, the goal would be to stay away from a lot of the existing regulations, but it's almost impossible not to operate under Part 135. Anytime you're transporting people for compensation, no matter how you skin it, you're going to end up having to adhere to Part 135 regs." Blackbird says they're simply bringing pilots, passengers and aircraft operators together under Part 91.

Because of the contradictions in how experts view Blackbird, aircraft owners are wise to look closely at what they might be signing up for long before they sign a lease. Blackbird says because it's operating under Part 91, not Part 135, the passenger is renting the airplane and the passenger engages the services of the [contract]



pilot. The company says, “the flight is initiated by the passenger” and “the passenger maintains operational control.” The question is whether or not a passenger, uneducated about the ways of charter flying, understands the relationship Blackbird is creating. This gray area frightens regular charter companies.

Although Blackbird has never had a mishap, consider what might happen after an accident. Blackbird tells aircraft owners not to fret because the airplane is, after all, insured by the policy belonging to the aircraft owner/operator. If you’re an individual aircraft owner who operates an airplane for pleasure or for your own business, it’s worth asking your broker how they’d feel about someone making money somewhere using your machine the way it’s currently insured, since Blackbird sounds an awful lot like a commercial operation to most critics.

A look at Blackbird’s web presence reminds everyone that, “every pilot is commercially certified,” and even “surpasses Blackbird’s own standards. Before joining the BlackBird community, every pilot must meet BlackBird’s safety requirements.” Those include a commercial pilot certificate, at least 500 flight hours, a background check, a valid first- or second-class medical certificate, an instrument rating and aircraft currency.” If the service is flown by a pilot, even a commercially rated one under Part 91, one question would be how much training that pilot has had recently. To be eligible to fly under Part 135, pilots must have recently completed a competency checkride with an FAA designated examiner. The aircraft must also be closely examined and found to meet commercial standards. On the aircraft side, Blackbird standards require aircraft to come with an airworthiness certificate, an FAA registration, an annual inspection, an ELT, seat belts and required emergency equipment. What airplane wouldn’t meet those requirements?

Ryan Waguespack looked closer at some of the questions that have arisen surrounding Blackbird. Waguespack is the vice president of aircraft management, air charter services & MROs at the National Air Transportation Association (NATA) in Washington. He explained that the legitimate charter industry “is historically a safe industry. We assume the pilot is properly trained and that the aircraft is well maintained.” He worries that the unrefined flying public might see nothing more than a cheap \$99 price tag for a flight from say San Francisco to Lake Tahoe. “It costs more than that just to operate the airplane.” He doubts the “majority of the public truly understands the risks.” Nor might some aircraft owners. In the case of Blackbird, he points out that the company is simply “deflecting the risk.” The need for the passenger to be responsible to check both the pilot and the aircraft’s qualifications for the flight is where Waguespack says the public is being misled. He warned aircraft owners that “as a Part 91 operator, your estate could be penetrated. Who do you think is going to be

number one on the lawsuit if there’s an accident?” He said the insurance industry is only now beginning to look at companies like Blackbird. “It’s turning slowly, but [looking closer] it’s going to happen.”

In recent years a number of industry investigations have been initiated from organizations like NATA and the National Business Aviation Association (NBAA) into air charter companies that hold themselves out to the public as legitimate when they’re not. The crash of a Falcon 50 at Greenville, South Carolina, last year is a recent case in point. Neither the captain nor the first officer were actually certified to fly charter in the jet, but of course the passengers didn’t know that. The Falcon slid off the end of the runway at Greenville on landing, killing the two pilots and seriously injuring the two passengers in the cabin. Charter operations are often conducted in aircraft much smaller than a business jet. The part of Blackbird trying to convince owners to offer the company their airplane for lease can be found at [aircraftfy.io](http://aircraftfy.io).

Despite the questions, it’s ultimately the FAA’s duty to decide whether Blackbird is following all the rules, but despite repeated requests to the agency for an



JB Adkins,  
SkyRyde founder

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interpretation on this Blackbird question from traditional charter companies, the agency has been silent. The only thing we do know is that the FAA has initiated a special investigation of Blackbird but has yet to release any findings. The fact that the agency did not ban Blackbird from the skies outright offers some insight into the many questions that have arisen about the company, again, mostly from Part 135 charter companies.

Mentioned earlier, LA-based SkyRyde, founded by JB Adkins in 2014, an Embry-Riddle graduate and a pilot, spoke initially to similar battles Uber itself waged with regulators during its early years. He believes that while some incidents have occurred with Uber operations and been forgotten, “The margins for error in the air are pretty thin. It seems like every day, there’s an incident in the media involving general aviation. I don’t want [SkyRyde] to be a company that contributes to the stigma that general aviation is dangerous. I want to open this up so people can enjoy a safe and efficient way to get from A to B. Any pilot who wants to fly for SkyRyde,” he says, “will have to adhere to Part 135 standards.”

Adkins emphasized, “SkyRyde’s not varying from the regs at all. We’re just kind of reimagining them, trying to make our business model fit within the existing regulatory framework.” Adkins said “as an entrepreneur, I don’t wish ill on Blackbird or the founders. I think they’re trying to do something innovative.” He simply

believes “they’re undermining everything that we’ve worked to uphold in terms of safety and a passenger’s perception. It’s a little disingenuous. Right now, it seems like there’s no standard. There’s no oversight if you’re able to operate without a certificate.”

Some people believe that Blackbird isn’t holding itself out as a charter operator at all. Adkins says there’s more to the argument than just that. “A company doesn’t necessarily need to hold themselves out as Part 135. Most of the public has no idea what Part 135 means anyway.” Holding out, according to the FAA, simply means that an entity is presenting itself as a commercial air carrier operation. It doesn’t matter how they’re actually facilitating connecting people with airplanes. If a member of the unassuming public believes Blackbird to be the one conducting or facilitating commercial flights, that in and of itself is considered holding out [to the public].

At the moment, Adkins sees Blackbird like a dog chasing its tail. For the aircraft owner considering leasing their airplane to a company like Blackbird, the best advice right now might be buyer beware. **KA**

Rob Mark is a business aviation pilot, journalist and flight instructor. He also publishes the award-winning industry blog, *Jetwhine.com*.

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# Takeoff OAT Restrictions

by Tom Clements

**A**t the fourth King Air Gathering – KAG IV, the sold-out event held in September 2019, at the classic Hangar Hotel complex at the Fredericksburg, Texas airport (T82) – a question was asked about engine ice vane usage on the ground. Specifically, a concern was expressed about a temperature restriction stated in the Pilot's Operating Handbook (POH) for the model 200-series. Is a limit being violated at times when ice vanes are being used?

A follow-up question asked about a similar concern for the 300-series. I plan to review and discuss these questions and more in this article.

Realize that all King Airs have an OAT limit above which they are not allowed to operate. In almost all cases this is expressed as ISA + 37°C. "Golly, 37°C is only 98.6°F, so there'll be lots of times that we cannot fly!" many folks think. Wrong! The 37°C temperature is not the same as "ISA + 37°C." ISA stands for "International Standard Atmosphere," the engineering-accepted model of the average worldwide atmosphere. This is the one with a Sea Level temperature of 15°C or 59°F and a lapse rate of 2°C for each 1,000 feet up to the stratosphere that starts at FL350. ISA + 37°C is a shorthand way of saying, "The OAT that is 37°C above the standard temperature for that altitude."

Therefore, at Sea Level, the King Air's limiting OAT for operation is 52°C (15 + 37). This equates to about 125°F. Does it ever hit that sweltering temp? Sure, but it's quite rare. Can you figure what the limit is at 10,000 feet? Since the standard atmosphere experiences a drop of 2°C for every thousand feet, we would have decreased 20° from Sea Level to 10,000. That puts ISA at -5°C. Adding 37 more gives 32°C, or about 90°F ... mighty warm at 10K!

I heard from experimental flight test colleagues at Beech that the limiting factor for hot weather operation is the size and capability of the engine oil cooler. We all know that performance decreases as temperature increases. Although performance would definitely degrade, the actual reason why there is an OAT limit is based on the ability of the oil cooler to keep oil temperature from exceeding its limit. As a side note, the fact that the Blackhawk XP67A engine modification to the 350 adds a fixed "cowl flap" at the oil cooler's outlet yet still has an OAT limit 3° cooler than before – ISA + 34°C now – lends

support to the assumption that oil cooling is the reason for the OAT limit. (If that poses an operational problem for XP67 airplanes based in hotter climates, a larger oil cooler is available that brings the OAT limit back up to the original value.)

When the model 200 first appeared, its POH stated that engine ice vanes could not be extended when the OAT exceeds 15°C. This applied for all operating conditions, ground and flight. Again, we return to oil cooling considerations. Unlike the King Airs that preceded the 200, as well as those that came later with the "Pitot Cowl" design, the cowl used for the 200-series is unique. When the ice vanes are extended, the "bypass door" also opens to allow the deflected ice particles to harmlessly leave the cowl. Oil cooling suffers now because the bypassing air is no longer able to flow across the oil cooler's fins. From its market introduction in 1974 up until the 1993 model year, the +15°C ice vane limitation was heeded with no operational difficulty experienced.

In 1993, beginning with serial number BB-1444, the B200 incorporated many welcome improvements. Among these were the advent of four-blade propellers as standard equipment, replacing the three-blade Hartzells and McCauleys of the past. The higher low idle compressor speeds and flatter low pitch stop blade angles – required to ensure that propeller speed remained above the new minimum propeller speed limit, a limit imposed to avoid the "reactionless vibration" mode that may lead to propeller damage – conspired to make FOD (foreign object damage) much more likely. Soon after the 300 model made its appearance in 1984, reports began arriving at Beech of numerous cases of first-stage compressor FOD on the PT6A-60A engines used on this new model. The distance from propeller tip to the ground is less in a 300 than in a 200. Combining that fact with the 300's pitot cowl and four-blade standard propellers with their higher idle speeds, FOD became much too common!

The easy solution was to change the procedure such that ice vanes – now correctly called "engine anti-ice" on the later King Air models – were deployed for all ground operation. The location of the oil cooler in the pitot cowl causes oil cooling to not be negatively impacted due to engine anti-ice activation. Thus, there really was no downside risk associated with this new procedure of "Ice vanes extended for all ground ops."

Therefore, when this same FOD worry started affecting B200s of 1993 and after design – as well as earlier 200s and B200s that were now being retrofitted with four-blade props – the solution was easy ... copy the 300 technique and use ice vanes all the time while on the ground. Oops! What about that +15°C limit that applies to the 200-series but not the 300-series?

For a few years, the limitation was basically ignored. Personal observation has convinced me that it is extremely rare for oil temperature to hit the maximum redline even in Phoenix, Arizona, in the summer months with a lengthy ground delay. Whew, I am happy for that! Then Beech got around to revising the POH and removing the +15°C limit. Now there is a “Note” in the “Before Engine Starting” section of the normal checklist that reads as follows: “The engine ice vanes should be extended for all ground

operations to minimize ingestion of ground debris. Turn engine anti-ice off, when required, to maintain oil temperature within limits.”

If you, unlike I, do indeed find that you must turn engine anti-ice off because of hot oil, then avoid using beta and reverse even if it means riding the brakes at times.

Under the title of “Icing Limitations” found in Section 2 of the B200’s POH it states: “ICE VANES, LEFT and RIGHT, shall be extended for operations in ambient temperatures of +5°C or below when flight free of visible moisture cannot be assured.” The next statement is: “ICE VANES, LEFT and RIGHT, shall be retracted for all takeoff and flight operations in ambient temperatures of above +15°C.”

It is obvious that FOD due to ground debris is not a problem in flight. It is also not a problem during takeoff unless the takeoff is aborted

and reverse remains in use to too low of an airspeed. Hence, when doing the runway lineup procedure on warmer days, it is time to retract the vanes. Not only is better oil cooling assured but more takeoff power can now be achieved with less chance of being ITT-limited.

Now let’s examine the 300-series “Icing Limitations” found in Section 2 of its POH. This one is nearly identical to the 200, except for substituting “Engine Anti-Ice” for “Ice Vanes”: “ENGINE ANTI-ICE, LEFT and RIGHT, shall be ON for operations in ambient temperatures of +5°C or below when flight free of visible moisture cannot be assured.” The next statement is: “ENGINE ANTI-ICE, LEFT and RIGHT, shall be OFF for all takeoff and flight operations in ambient temperatures of above +10°C.”

Do you notice what is different between the 300 and 200 in the second limitation? The ambient temperature got dropped by 5°: +10°C for the 300 and +15°C for the 200. Why the difference?

Since the pitot cowl of the 300 negates any oil cooling worry, the reason has nothing to do with the oil cooler’s effectiveness. Rather, it comes from wanting to ensure proper takeoff performance. When there is no need for ice protection, why subject the engine to the slight power loss that goes hand-in-hand with ice vane deployment? The “Minimum Takeoff Power” numbers – from the graph in the Performance section of the POH – are based on the assumption that ice vanes will not be deployed during takeoff when unneeded.

In a similar manner, this helps explain the 300-series’ POH statement that, on first reading, makes no sense: “For takeoff, Generator Load must not exceed 30% with air conditioning on, nor 50% with air conditioning off.” Since the condenser blower operates whenever AC is operating with the nose gear extended, and since this blower uses about 50 amps, it seems

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that the generator load would be higher, not lower, with AC on. Right? Yes, that is correct ... but it's not what the restriction is addressing.


The engine is subject to three things that can cause available takeoff power to be less than optimal even though the engine itself is fine: (1) Cowling inefficiencies, caused by ice vane deployment; (2) Compressor shaft load or drag caused by the need to drive the AC's compressor (on the right engine); and (3) Compressor shaft load caused by generator load (on both engines). If we have little electrical load – no electric heater or windshield heat in use – then we can abide the AC drag and still have sufficient power available to the propeller to meet takeoff power design criteria. However, if the generators are working their guts out, then we don't have enough "leftover" power to load up the compressor with the AC's compressor drag.

To summarize then, the 300's requirement to not use engine anti-ice for takeoff when OAT is above +10°C is based not on oil cooling concerns but instead is based on eliminating the cowling inefficiencies that could lead to inability to meet the Minimum Takeoff Power target torque.

For all of the other King Air models – 90-series, 100-series – you, like the 300-series, have no tie-in between ice vane deployment and oil cooling. If you have a three-blade propeller, especially if it's combined with the original "Chin" style of cowling, there is no concern about FOD due to ground debris even with the ice vanes retracted. On the other hand, four blade props combined with the pitot cowl – F90-1s, C90As and after – have enough FOD potential that engine anti-ice ON while on the ground is strongly recommended.

But consider this: Leaving the ice vanes up on a four-blade 200 or any member of the 300-series is asking for FOD ... leading to a very expensive repair. But having the ice vanes down on your B90 causes no

problems whatsoever. If you, like many pilots, fly a variety of King Air models, then there is absolutely nothing wrong with making "Ice Vanes down for all Ground Ops" your SOP (Standard Operating Practice). Are ITTs affected? Is engine starting affected? No! The only negative associated with this procedure is forgetting to retract them when taking the runway and hence not being able to attain your target minimum takeoff power.

I'll leave you with this thought, readers: Forgetting to retract the ice vanes for takeoff may not be as bad as you think it is. Why? Because the ram air loss at takeoff speed – 100 knots? – is a whole lot less than what you are used to seeing when you pull those ice vane handles out (or activate the switches) before entering that cloud deck below you while in a descent doing 200+ knots. You dig? Groovy, man! 

King Air expert Tom Clements has been flying and instructing in King Airs for over 46 years, and is the author of "The King Air Book." 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 book, 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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# Econo-Jet — the Model 73

Beech Aircraft Corporation's Jet Mentor was built on a tight budget and performed well but lost its bid to be the U.S. Air Force's first turbine-powered basic trainer to crosstown rival Cessna Aircraft Company's Model 318.

by Edward H. Phillips

**D**uring the early 1950s, excitement about the “Dawn of the Jet Age” was capturing the imagination of the American public. World War II, still a very fresh memory to millions of Americans who had fought in that global conflict or lived through it, had seen the jet fighter's combat debut as the twin-engine Messerschmitt Me-262 tore through Allied bomber formations, wreaking havoc and easily evading Allied fighters with its 500-plus mph maximum speed. In response to the German threat, the British Royal Air Force soon fielded a twin-engine jet fighter of their own, the Gloster Meteor and by 1943-1944 the United States Army Air Forces was experimenting with the Bell XP-59 powered by two jet engines provided by the British.

In addition, during 1950-1953 the escalating air war in the skies over Korea was often headline news as North American single-engine F-86 Sabre jet fighters clashed in dogfights with the much-vaunted Soviet MiG 15- and MiG 17-series jets flown by Russian and North Korean pilots. By the end of the Korean conflict in 1953, it had become painfully clear to the champions of United States military aviation that the day of the reciprocating piston engine as the “prime mover” of front-line fighter aircraft was rapidly drawing to a close.<sup>1</sup>

As early as 1945 the Army Air Forces had begun taking delivery of the single-engine Lockheed F-80 Shooting Star – the service's first combat jet fighter that also

served with distinction as a fighter-bomber during the Korean War. A two-place, tandem-seat version designated T-33 eventually became the Air Force's standard airframe for training new jet pilots who had already earned their wings in war-weary T-6 trainers that had been rebuilt. To bridge the wide gap between the Beechcraft T-34 and the T-33, in 1950 the Air Force began operating the North American T-28A Trojan as its basic and primary pilot training platform.<sup>2</sup>

In 1953-1954, however, the Air Force also had begun taking delivery of the Beechcraft Model 45 Mentor – a two-place, tandem-seat, piston-powered airplane that was much better suited to serve as a basic trainer than the T-28A. Recognizing that the time had finally come to bid farewell to the venerable T-6 and SNJ, in the early 1950s both the Air Force and Navy, working independently, began formulating plans to obtain a jet-powered basic trainer. Early in 1952 the Air Force conducted a design competition for a primary jet trainer and three manufacturers responded – Wichita, Kansas-based Beech Aircraft Corporation and Cessna Aircraft Company, and Dallas, Texas-based Texas Engineering & Manufacturing Company (TEMCO).

Cessna's design was designated the Model 318 and was a “clean-sheet” airplane powered by two Turbomeca Marboré II centrifugal-flow turbojet engines, each rated at 920 pounds of static thrust. The compact powerplant was built in the United States under license by Continental Motors, which had obtained manufacturing rights in 1951. The engine was designated as the military J-69-T-7. The engines were buried in the wing root area. Inlet air



The Beechcraft Model 73 was powered by a single Turbomeca Marboré II centrifugal-flow turbojet (military J-69-T-7) mounted in the aft fuselage section. The lightweight Jet Mentor demonstrated excellent handling qualities and good performance on only 920 pounds of static thrust. Note test probe mounted on left side of the nose section. (Kansas Aviation Museum)





The Model 51 was built by the Texas Engineering and Manufacturing Company to challenge Cessna's Model 318 and the Beechcraft Model 73. A mid-wing design, it was evaluated by the U.S. Navy as the TT-1 Pinto primary jet trainer, but only 14 were built.

(Edward H. Phillips Collection)

screens extended when the tricycle landing gear was down and retracted when the gear was up.


The airframe was of all-metal, monocoque construction and the wings featured slotted flaps mounted inboard of the ailerons that were operated hydraulically. Wingspan was 33 feet, 9.5 inches, length 29 feet, 4 inches and height 9 feet, 2.5 inches. A speed brake was installed under the forward fuselage section below the cockpit and could be extended up to 50 degrees. The empennage was a semi-crucifix design with electrically operated trim tabs on the elevator panels and rudder, which were covered in fabric.

The Model 318 departed from the Air Force's conventional, tandem seating configuration by placing the student pilot and instructor side-by-side in ejection seats under a large canopy that could be jettisoned in an emergency. Dual controls were standard. At the design maximum gross weight of 6,250 pounds, maximum speed was 370 knots and the airplane could climb to an altitude of 35,100 feet. The twin-engine jet made its first flight Oct. 12, 1954, under the command of company test pilot Bob Hagan.

Temco's proposed trainer, the Model 51, was powered by a single Continental-built J-69 turbojet engine rated at 920 pounds static thrust. Its all-metal airframe featured a molded fiberglass tail cone, and some wing panels and the landing gear doors were




Cessna Aircraft Company's Model 318 was a new design that featured two J-69-T-7 turbojet engines and side-by-side seating for the student and instructor pilot instead of the conventional tandem configuration. The Model 318 eventually became the U.S. Air Force's T-37A primary jet trainer that served for decades until it was replaced by the turboprop-powered Beechcraft T-6A Texan. (Textron Aviation)



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manufactured using metal honeycomb materials. The wing, which spanned 29 feet, 10 inches with an area of 150 square feet, was mounted midway up the fuselage and featured three different airfoil sections along the span to preserve airflow across the ailerons deep into a stall. The cantilever empennage was all-metal. The tricycle landing gear was operated hydraulically and was designed to extend and lock into place if a complete hydraulic failure occurred.

Dual ejection seats were installed with the rear seat raised slightly to improve the instructor's forward field of view. The large canopy could be jettisoned. Temco officials claimed that the engine could be exposed for inspection in only 10 seconds and a complete engine change was possible in only 20 minutes. The prototype Model 51 took to the sky March 26, 1956, and later was flown to NAS Patuxent River, Maryland, where it was evaluated alongside the Beechcraft Model 73 Jet Mentor.

According to Beech Aircraft Corporation historian William H. McDaniel, the Model 73 was proposed as a private entry based largely on the Model 45 Mentor piston-powered primary trainer that was serving with the Air Force and Navy. Billed by Beech as "the most economical jet trainer in the world," the Jet Mentor was designed from the outset as a low-cost, economical yet high performance aircraft, and could lay claim to being the first lightweight, single-engine jet aircraft manufactured in the United States.

To minimize design and development costs, Beech Aircraft's engineering department took a few pages from its ubiquitous airframe "cookbook" to build the Jet Mentor. Because acquisition and operating factors were such important considerations in the competition, the airframe borrowed major assemblies from the Model 45 Mentor (USAF T-34A and T-34B), such as the outboard wing sections and the empennage. The tricycle landing gear was operated electrically (same as the Model 45) and featured single-disc brakes (as did the Mentor). As with the Temco Model 51 and the Cessna Model 318, the Model 73 was propelled by the Turbomeca Marboré II turbojet engine. It was built in America by Continental under license from the French manufacturer as the military J-69-T-7, rated at 920 pounds static thrust.

Basic specifications of the Jet Mentor included:

- Wingspan – 32 feet, 9 inches
- Wing area – 177.6 square feet
- Aspect ratio – 6.05
- Chord – 65.33 inches
- Dihedral – 7 degrees
- Single-slotted flaps



Walter H. Beech was chiefly responsible for development of the Beechcraft Model 45 Mentor in the late 1940s. The tandem-seat trainer was economical to operate and easy to maintain, unlike the U.S. Air Force's North American T-6G and the U.S. Navy's SNJ that had outlived their mission. In 1954 the Model 45 served as a baseline for development of the Model 73 Jet Mentor. (Textron Aviation)



- Speed brakes
- Length – 30 feet
- Height – 9 feet, 9.5 inches
- Fuel tanks –  
Total capacity of 180 gallons  
in two wing tanks
- Empty weight – 2,925 pounds
- Useful load – 1,596 pounds
- Maximum gross weight –  
4,521 pounds

The first flight of the Jet Mentor occurred Dec. 18, 1955, with company test pilot Tom Gillespie at the controls.

The air-conditioned cockpit featured a conventional, two-seat tandem configuration for the student and instructor pilot. Both were seated under a large canopy that, in an emergency occurred, could be jettisoned before both pilots activated the ejection seats to leave the airplane. In addition, the clamshell-type canopy was powered open and closed.

In terms of performance the Model 73 could attain a maximum speed of 295 mph at an altitude of 15,000 feet and cruised at 245 mph. Stall speed (flaps fully extended) was a benign

65 mph. Service ceiling was 28,000 feet with a rate of climb (at sea level) of 1,400 feet per minute. Maximum range was 450 statute miles.

In comparing the Beechcraft, Cessna and Temco candidates for the lucrative Air Force contract, all three were similar in size, met military equipment requirements and were very comparable in their overall capabilities. In April 1953 the Air Force selected Cessna's entry that was developed into the XT-37, and by 1956 three prototype airplanes had logged more than 1,000

test flights. These were followed by an order in 1954-1955 for 11 T-37A trainers and full-scale production of 270 aircraft was underway during 1957-1958. Initial deliveries of the T-37A began in 1957, and the first all-jet pilot training class began flying the trainer in November 1958 and in 1961 the Air Force ceased all primary flight training in piston-powered airplanes.

In 1957 the Temco Model 51 was eventually selected by the U.S. Navy to be evaluated as the service's primary jet trainer. A total of 14



After failing to win the Air Force competition, the Model 73 gradually faded from the aviation scene. Fortunately, it was not scrapped, and as of 2018 remained in storage at the Kansas Aviation Museum in Wichita awaiting its turn to be restored and placed on static display. (Kansas Aviation Museum)



On Dec. 18, 1955, Beech Aircraft Corporation president and CEO Olive Ann Beech took time from her busy schedule to shake hands with test pilot Tom Gillespie shortly before the Jet Mentor's first flight. (Wichita State University Libraries and Archives, Department of Special Collections)

aircraft designated TT-1 were built and assigned to the U.S. Naval Air Training Command, NAS Pensacola, Florida. The TT-1 would serve as a platform in the Navy's quest to "determine the feasibility of beginning a student pilot's flight training in jet-propelled aircraft." Deliveries began in July 1957. By December 1960, however, the Navy discontinued use of the TT-1 and resumed primary training in the Beechcraft T-34B and North American T-28. During the 1980s both of those aging airframes would be replaced by the turboprop-powered T-34C.

As time went by the Beechcraft Model 73 did not attract any further attention from the Air Force, but Navy and U.S. Marine pilots who evaluated the Beechcraft were impressed by its systems, handling qualities, cockpit comfort and performance. The Navy, however, chose the Temco design chiefly because of its low price tag. As Beechcraft historian McDaniel wrote, "That was the beginning of the end for the Jet Mentor, but to pilots who saw and flew the swift, maneuverable little ship, it remains even today "The airplane I'd like most like to own—just for fun!"<sup>3</sup> KA

#### Notes:

<sup>1</sup> "Prime mover" is a term long used by the FAA to describe a power-plant, whether piston, turbine or electric, that is the chief means of propulsion for an aircraft.



During a test flight the Model 73 was caught in a playful mood above the clouds and Kansas prairie. Equipped with dual ejection seats and a canopy that could be jettisoned in an emergency, the jet-powered Beechcraft was designed to be affordable and economical to operate but was rejected by the Air Force. (Textron Aviation)

<sup>2</sup> Throughout the late 1940s and into the early 1950s hundreds of war-weary North American T-6 (U.S. Navy SNJ) trainers were rebuilt and soldiered on as advanced trainers, but despite being refurbished, Air Force and Navy officials recognized that their aging airframes and thirsty static air-cooled radial engines would eventually become increasingly expensive to operate, repair and replace.

<sup>3</sup> As of 2018 the sole Jet Mentor airframe is in storage at the Kansas Aviation Museum in Wichita awaiting restoration. For more information go to [www.kansasaviationmuseum.org](http://www.kansasaviationmuseum.org)

Ed Phillips, now retired and living in the South, has researched and written eight books on the unique and rich aviation history that belongs to Wichita, Kan. His writings have focused on the evolution of the airplanes, companies and people that have made Wichita the "Air Capital of the World" for more than 80 years.



## Technical Review Webinar Session Scheduled for King Air models

Textron Aviation is inviting King Air owners to a LIVE Tech Session with your aircraft experts. The King Air session is scheduled for Wednesday, Nov. 13, 9-10 a.m. (CST).

The company states that during the session they will update customers regarding current and pending field programs as well as, discuss service and maintenance issues. This is your chance to connect with Textron Aviation and your peers, ask questions and make suggestions.

If interested you must register for the session. For any questions/comments, please contact [txtavsupport@txtav.com](mailto:txtavsupport@txtav.com).

## Hartzell and Raisbeck Team Up to Provide 5-blade Composite Prop for KA200 Fleet

Hartzell Propeller Inc. and Raisbeck Engineering recently debuted a 5-blade composite swept prop, designed and manufactured by Hartzell specifically for the King Air 200, B200 and B200GT aircraft and STC'd and distributed by Raisbeck Engineering.



This new propeller system is the first five-blade structural composite propeller certified on the King Air 200 series and is said to increase performance across the board delivering more than 15 percent greater takeoff acceleration, over 10 percent better climb rate and five- to seven-knots faster cruise performance compared to original equipment propellers.

Constructed of structural carbon fiber composite with nickel cobalt leading edges to protect against foreign object damage, the new composite five-blade swept propellers optimize airfoil efficiency allowing for a larger 96-inch diameter propeller with less blade tip noise and providing a noticeably quieter cabin – a 30% noise reduction. This next generation of propellers offers King Air operators an average of 48 pounds total weight savings versus OEM-installed propellers. The

propeller also features unlimited blade life, thereby lowering maintenance and overhaul costs.

King Air 200 series owners and operators are encouraged to contact Raisbeck or a Raisbeck authorized dealer for more information and pricing.

## Garmin® adds G1000 NXi upgrade for the King Air C90

Garmin International, Inc. recently announced certification of the G1000® NXi integrated flight deck upgrade for the King Air C90. With the G1000 NXi, aircraft owners and operators receive a wealth of new features, innovative capabilities and added utility all within a modern flight deck. King Air C90 owners and operators can easily upgrade from the G1000 to the G1000 NXi with minimal aircraft downtime and installation labor to receive a next-generation integrated flight deck.

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Flight Stream 510 and Connex<sup>®</sup> technology within the G1000 NXi integrated flight deck enables Database Concierge, the wireless transfer of aviation databases from the Garmin Pilot<sup>™</sup> app on a mobile device to the G1000 NXi. Additional features include two-way flight plan transfer, the sharing of traffic<sup>1</sup>, weather<sup>1</sup>, GPS information, backup attitude information and more, between the G1000 NXi and the Garmin Pilot, FltPlan Go and ForeFlight Mobile applications.

Visual approach guidance and map overlay within the horizontal situation indicator (HSI) further enhance the G1000 NXi feature set. Within the HSI map, pilots can overlay NEXRAD, Flight Information Service-Broadcast (FIS-B) weather, weather radar, SafeTaxi<sup>®</sup> airport diagrams, traffic, terrain and more. NEXRAD weather radar imagery can be overlaid on the moving map and animated on the multifunction display (MFD). Split-screen view is also available on the MFD, offering a simultaneous view of maps, charts, checklists, flight plans and more on a single screen. The addition of sectional

charts and IFR low/high enroute charts give pilots convenient access to chart data on the flight display.

The G1000 NXi also supports the display of Automatic Dependent Surveillance-Broadcast (ADS-B) In traffic and subscription-free Flight Information Service-Broadcast (FIS-B) weather. The addition of SurfaceWatch runway monitoring technology provides visual and aural cues to help prevent pilots from taking off or landing on a taxiway, on a runway that is too short or on the wrong runway based on performance data entered during preflight. Visual and audible runway distance remaining annunciations are also available via SurfaceWatch within the G1000 NXi.

The G1000 NXi integrated flight deck upgrade is also available for the King Air 200/300/350. The G1000 NXi upgrade for the King Air C90 is available immediately through select Garmin dealers. The upgraded components of the G1000 NXi also come with a two-year warranty, which is supported by Garmin's award-winning avionics product support team.

For additional information regarding the G1000 NXi upgrade for the King Air, contact Scott Frye at (913) 440-2412 or [scott.frye@garmin.com](mailto:scott.frye@garmin.com). For additional details, visit: [www.garmin.com/kingair](http://www.garmin.com/kingair).

<sup>1</sup> Applicable to aircraft with compatible hardware.

## G1000 Level-D Sim for King Air 350 and 200 Added at FlyRight

FlyRight, a North Carolina-based, leading provider of professional, full-motion simulation-based, pilot training services, is expanding its King Air training programs to include G1000 avionics. Initial, recurrent and custom training courses will be provided in FlyRight's



new full-motion Level-D King Air 350/200 G1000 simulator. The new simulator, manufactured by ASE, is convertible between a King Air B200 and King Air 350 model, both equipped with G1000 NXi avionics. It will feature an electric motion base with the ability to provide upset recovery training. The addition of the new simulator will make the third full-motion King Air simulator for FlyRight, joining its existing King Air 350i Pro Line 21 and King Air B200 simulators already in service.

FlyRight is accepting training reservations for G1000 training courses for 2019 and 2020. For more information, please contact Andy Bauer at (800) 596-3054, or via email at [abauer@flyrightinc.com](mailto:abauer@flyrightinc.com).

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# KingAir Technically...

## *From Service Bulletin MTB-33-01: Lights – Replacement of Entry and Ice Light Sockets*

**Date:** Oct. 7, 2019

**Effectivity:** King Airs

Model 100, A100, Serial Numbers B-1 thru B-247;

Model A100-1 (U-21J), Serial Numbers BB-3 thru BB-5;

Model 200, B200, Serial Numbers BB-2, BB-6 thru BB-185, BB-187 thru BB-202, BB-204 thru BB-269, BB-271 thru BB-407, BB-409 thru BB-468, BB-470 thru BB-488, BB-490 thru BB-509, BB-511, BB-529, BB-531 thru BB-550, BB-552 thru BB-562, BB-564 thru BB-572, BB-574 thru BB-590, BB-592 thru BB-608, BB-610 thru BB-626, BB-628 thru BB-646, BB-666 thru BB-694, BB-696 thru BB-797, BB-799 thru BB-822, BB-824 thru BB-870, BB-872 thru BB-894, BB-896 thru BB-990, BB-992 thru BB-1051, BB-1053 thru BB-1092, BB-1094, BB-1095, BB-1099 thru BB-1104, BB-1106 thru BB-1116, BB-1118 thru BB-1184, BB-1186 thru BB-1263, BB-1265 thru BB-1288, BB-1290 thru BB-1300, BB-1302 thru BB-1425, BB-1427 thru BB-1447, BB-1449, BB-1450, BB-1452, BB-1453, BB-1455, BB-1456, BB-1458 and On;

Model A200 (C-12C), Serial Numbers BC-1 thru BC-75, BD-1 thru BD-30;

Model B100, Serial Numbers BE-1 thru BE-137;

Model A200C (UC-12B), Serial Numbers BJ-1 thru BJ-66;

Model 200C, B200C, B200C (C-12F), Serial Numbers BL-1 thru BL-23, BL-25 thru BL-57, BL-61 thru BL-113, BL-115, BL-116, BL-118 and On;

Model 200CT, B200CT, Serial Numbers BN-1 thru BN-4;

Model A200CT (FWC-12D), Serial Numbers BP-7 thru BP-11;

Model 200T, B200T, Serial Numbers BT-1 thru BT-16, BT-18 thru BT-43;

Model B200C (UC-12F), Serial Numbers BU-1 thru BU-10;

Model B200C (UC-12M), Serial Numbers BV-1 thru BV-10;

Model B200C (C-12R), Serial Numbers BW-1 thru BW-29;

Model B200GT, Serial Numbers BY-1 thru BY-329;

Model B200CGT, Serial Number BZ-1;

Model A200CT (RC-12D), A200CT (RC-12H), Serial Numbers GR-1 thru GR-19;

Model 300, Serial Numbers FA-1 thru FA-239;

Model A200CT (RC-12G), Serial Numbers FC-1 thru FC-3;

Model A200CT (RC-12K), Serial Numbers FE-1 thru FE-9;

Model A200CT (RC-12K), Serial Numbers FE-10 thru FE-24;

Model A200CT (RC-12P), Serial Numbers FE-25 thru FE-31;

Model A200CT (RC-12Q), Serial Numbers FE-32, FE-34, FE-36;

Model 300, Serial Numbers FF-1 thru FF-19;

Model B300, Serial Numbers FL-1 thru FL-1153;

Model B300C, Serial Numbers FM-1 thru FM-76;

Model B300C, Serial Number FN-1;

Model F90, Serial Numbers LA-2 thru LA-236;

Model 65-90, B90, C90, C90A, C90GT, C90GTi, Serial Numbers LJ-1 thru LJ-2151;

Model H90 (T-44A), Serial Numbers LL-1 thru LL-61;

Model 65-A90, Serial Numbers LM-1 thru LM-141;

Model 65-A90-4 (RU-21E), 65-A90-4 (RU-21H), Serial Numbers LU-1 thru LU-18;

Model E90, Serial Numbers LW-1 thru LW-347;

Model 99, Serial Numbers U-1 thru U-49, U-51 thru U-145, U-147;

Model C99, Serial Numbers U-50, U-165 thru U-239

**Reason:** To provide a spares replacement for faulty entry and ice light sockets.

**Compliance – Optional:** This service document can be accomplished at the discretion of the owner.

**Parts Availability:** Please contact Textron Aviation Parts Distribution for current cost and availability of parts listed in this service document. Phone at 1-800-835-4000 (Domestic) or 1-316-517-5603 (International). Send email to: [parts@txtav.com](mailto:parts@txtav.com).

Based on availability and lead times, parts may require advanced scheduling.

**Warranty:** None

### **From MTL 12-01R: Servicing – Air Conditioner Compressor Oil Quantity Manual Changes**

**NOTE:** This revision replaces the original issue of MTL-12-01 in its entirety.

**Date:** Oct. 22, 2019 (Revision); Sept. 26, 2019 (Original)

**Effectivity:** King Air Model 200, B200, Serial Numbers BB-1978, BB-1988 and On; King Air Model B200GT, Serial Numbers BY-1 and On; King Air Model B200CGT, Serial Number BZ-1; King Air Model

B300, Serial Numbers FL-493, FL-500 and On; King Air Model B300C, Serial Numbers FM-14 and On

**NOTE:** This service letter also applies to any airplane that has been modified with a 130-5509-001 Kit.

**Reason:** To communicate a change in the air conditioning system oil quantities listed in the maintenance manual for servicing.

**Description:** This service letter provides information for anyone replacing a 201-0450-3 King Air Keith System AC compressor on maintenance manual changes to Chapter 12, Air Conditioning System – Servicing. Oil quantity requirements change from 11 fluid ounces to 17 fluid ounces when servicing air conditioning system for the models listed in this service letter. A 201-0450-1 or 201-0450-2 King Air Keith System AC compressor still requires 11 ounces of oil.

### **Compliance – Informational:**

This service document is for informational purposes only.

**NOTE:** As a convenience, service documents are now available online to all our customers through a simple, free-of-charge registration process. If you would like to sign up, please visit the Customer Access link at [www.txtavsupport.com](http://www.txtavsupport.com) to register.

*The information provided in this column may be abbreviated for space purposes. For the entire communication, go to [www.txtavsupport.com](http://www.txtavsupport.com).*

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Rebecca Mead, Chief Financial Officer



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At Elliott Aviation, we are Garmin's #1 King Air G1000 NXi retrofitter and we've completed **more Garmin G1000 installations than all other dealers in the world COMBINED!** For current G1000 owners, the NXi gives you a cost-effective, plug-and-play solution that can be completed in **as little as two days**. As a Factory Authorized King Air Service Center, Elliott Aviation offers on-site training to make sure you are comfortable with your system before you leave.

### The Garmin G1000 NXi Features the Following Upgrades over the Standard G1000:

- SurfaceWatch Runway Monitoring Technology
- Optional Cockpit Connectivity Including Automated Database Transfer
- MFD Display-Like in the HSI on the PFD (Can Include SafeTaxi, Flight Plan, METAR's and More)
- Greater Display Resolution and Brightness
- Improved Map Performance
- Many More Improvements!

  
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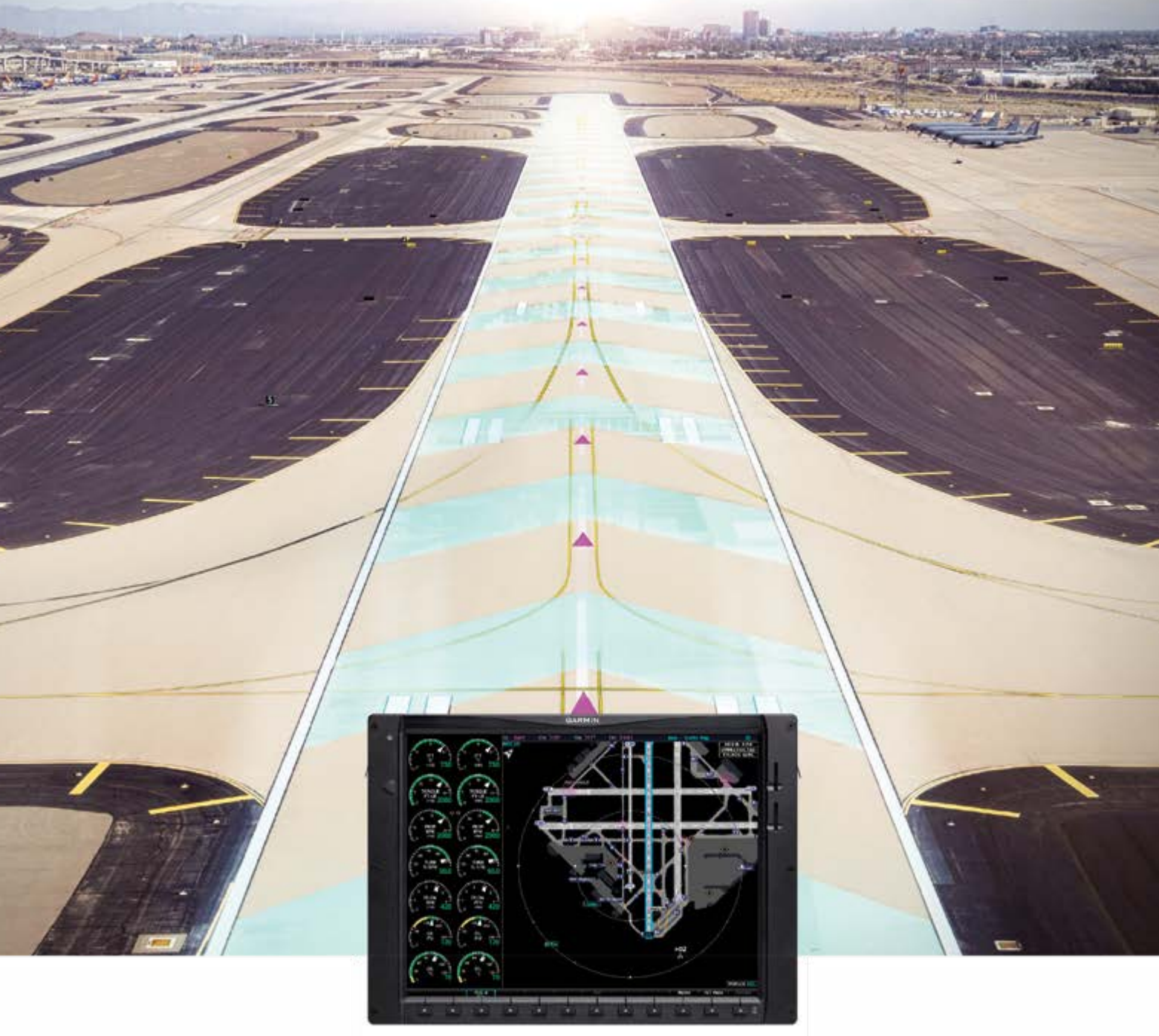


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