King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

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Family by Flight

King Air unites pilot, owners, service providers

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

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DREAM

Veteran pilot spends career in the King Air

Teton Aviation L.L.C.'s King Air 200 in Jackson Hole, Wyoming with the Grand Tetons as a backdrop. (Inset) Teton Aviation's Chief Pilot Bert Bollar before a flight to Denver for a Broncos game. (TETON AVIATION)

JOB

by MeLinda Schnyder

Bert Bollar has been flying Beechcraft King Airs since 1983 and has flown N88JH, a 1989 King Air B200, for the past 19 years. He calls the airplane a member of his family and considers its owners part of his family, too.

"I have a dream job because after this long, I'm treated as family by my bosses just as they are treated as my family," the chief pilot said of the aircraft's owners, who hired him to fly the B200 when they purchased it in July 1997.

And landing at Elliott Aviation in Moline, Illinois, is like returning to their avionics home for the B200 and Bollar. "To me, these people are a big family and they fit me right into that family," Bollar said of the Elliott team that installed a Garmin G1000 suite in N88JH this year, 14 years after installing a Universal EFI-550 system in the airplane.

Five key project leads who worked on the 2002 retrofit were on the Elliott Aviation avionics team that installed the G1000 in March. They hadn't forgotten Bollar or the airplane.

Even though it's an '89 model, I'll put it up against a brand new King Air 250 as far as speed, performance and carrying capability because of the excellent shape we've been able to keep it in.

– Bert Bollar, Chief Pilot
Teton Aviation L.L.C.

"I remember what a big job it was," said Brandon Brown, a senior project manager at Elliott. "It was the first of its kind in the King Air – a full Universal upgrade – and Bert was the testbed for that project. It was a large STC project, a lot of man hours, a lot of pre-planning."

N88JH's Universal EFI-550 avionics system, installed in 2002, was a big undertaking and cutting edge for that time.
(ELLIOTT AVIATION)

When Bollar was ready for another large avionics install, he knew he wanted to work again with family. N88JH became the 200th G1000 retrofit completed by Elliott Aviation.

"With upcoming ADS-B mandates, we were faced with making a decision to put a lot of money just to update our current avionics, or to completely upgrade our system," Bollar said. "It just made sense cost-wise and weight-wise to go with the G1000. We gained 276 pounds of useful load and we have more capabilities with the G1000."

The making of an aviation family

Three families formed Teton Aviation L.L.C. in 1997 to acquire the B200 for Part 91 operations based at Jackson Hole Airport in Wyoming. Commercial service from Jackson Hole is limited so the King Air was purchased primarily for business travel within the state and westward. The owners are semi-retired now, and the airplane is flown mostly to visit family throughout the western United States and to bring family to Wyoming. They currently fly the B200 between 300 to 350 hours a year. Typical missions are less than 600 nautical miles with two to five passengers, although they've transported as many as eight in the cabin and they make occasional trips to the East Coast, Canada, Mexico or the Bahamas.

Bollar was hired just before the aircraft was delivered, and had recently retired from the Army with 4,500 hours in King Airs.

"I spent 28 years in the Army," Bollar said. "I flew helicopters initially, and then fixed-wing qualified the last portion of my years of my service. I flew the C-12, the military version of the King Air."

He's been Teton Aviation's only chief pilot and now has 12,000 hours of King Air time. In August 2014, he began flying with a full-time copilot. They attend FlightSafety every six months and Bollar said they are continuing to work through the nuances of learning the G1000 system. "We love the G1000," he said. "It's an excellent upgrade for any airplane with the older style avionics. It's really an awesome system."

Two decades of upgrades

Of course, in nearly two decades of ownership, avionics isn't the only upgrade Teton Aviation L.L.C. has made to its King Air.

"One of the primary reasons me and the bosses get along so well is that they allow us to maintain the

Bollar shows enthusiasm on his first flight with the new Garmin 1000 avionics, with Jon Young of Elliott Aviation.
(ELLIOTT AVIATION)

The Elliott Aviation team with Bollar (center), who says he feels as if he's part of their family.

airplane to the standards it needs to be," Bollar said. "Even though it's an '89 model, I'll put it up against a brand new King Air 250 as far as speed, performance and carrying capability because of the excellent shape we've been able to keep it in."

Bollar reserved a Blackhawk engine upgrade before the STC was awarded and had the Pratt & Whitney PT6A-61 engines installed when they became available in 2008. Combined with RVSM, the B200 was able to fly 4,000 feet higher and cruise 30 KTAS faster with the same total fuel flow.

"We can get the boss there faster and while on a typical hour-and-a-half mission that's only five or 10 minutes, it adds up over a year's time and saving the boss money in flight time that they have to pay to operate the airplane for the same amount of fuel," Bollar said. "It's an economic payback over the long haul, plus the performance is outstanding for hot and high conditions where we fly into 6,000- to 7,000-foot elevation airports on 90-, 100- or even 120-degree days out of Scottsdale. The performance of that bigger motor helps with speed, weather avoidance and gives us the ability to be safety oriented where you have full engine power on a hot day at high field elevation. It's a no-brainer in the long run."

The aircraft had a full interior overhaul at Western Aircraft in Boise, Idaho, in March 2014 and although Elliott Aviation last painted it in 2004, the orange-and-blue striping looks fresh and the scheme featuring a bucking horse and rider, a Wyoming state flag and an American flag turns heads. "I still have people regularly ask me when we got our airplane painted and they can't believe it when I tell them it was 12 years ago," Bollar said. "It's called elbow grease and taking care of the product."

Teton Aviation's King Air 200 got the Blackhawk engine upgrade, Pratt & Whitney PT6A-61 engines, when it became available in 2008.

Before each upgrade, Bollar and the owners have asked and studied: do we want a newer airplane, do we want to step up to a King Air 350, do we want to step up to a jet?

"The bottom line is that our B200 is well-maintained, it's reliable and it meets our mission requirements," Bollar said. "The way we maintain it and keep it up, the one we've got is just as good as a new one. It's a comfortable, dependable, lovable airplane. This airplane is family to me." KA

PAUL BOWEN PHOTOGRAPHY

PILOT KA SPEAK

Breaking Away from Runway Overruns

The FAA's New Rules for Runway Condition and Braking Action

by Matthew McDaniel

There is a premise among professional pilots that some FAA rules are intentionally vague and often open to interpretation in order to provide operational flexibility (within reason). For years, such has been the case with runway condition assessments and braking action reports. For example, most pilots who have operated under Federal Aviation Regulations (FAR) Part 91K, 135, or 121 have had hard limits for what runway conditions and braking action reports would permit or prohibit a runway's use. Yet, pilots and controllers alike understand the "game" and what is sometimes necessary to complete the mission, while also remaining firmly within the rules.

Playing the Game

Consider this theoretical situation between a King Air charter operation (Part 135) and Air Traffic Control (ATC). Assume the charter operator's Operating Specifications (OpSpecs) state that landing is prohibited with braking actions, or Mu-reading equivalents, of less than Fair, with the most recent report being controlling. An airliner is cleared to land on runway 18 and is given the most recent Mu readings for that runway of .30/.30/.30 [touchdown, mid and roll-out zones, respectively]. A Mu (or co-efficient of friction) measurement of .30 is generally considered to be the bottom of the Fair braking action range, before entering the Fair-to-Poor range of .29 to .26 [see Figure 1]. After landing, the airliner reports braking action as "Poor." The King Air on approach is told of this latest report. The pilot responds that he cannot land with braking action reported as less than Fair and is, thus, issued a holding clearance and told that airport operations will not be taking the next Mu-readings for 40 minutes. Meanwhile, a corporate jet (operating under Part 91), overhears this exchange, completes an approach and landing, subsequently reporting braking action as "Fair" (knowing full well that his report will supersede the previous airliner's report, thereby allowing the King Air to accept an

Current (New) Braking Action Terminology	Corresponding Runway Condition Code (RwyCC)	Previous Braking Action Terminology	Approximate Corresponding Mu Measurements**
[None, but assumes a Dry condition]	6	[None]	[None]
"Good"	5	"Good"	.40 and above
"Good to Medium"	4	"Good to Fair"	.39 to .36
"Medium"	3	"Fair"	.35 to .30
"Medium to Poor"	2	"Fair to Poor"	.29 to .26
"Poor"	1	"Poor"	.25 to .20***
"Nil"	0	"Poor to Nil"	.20 to .18***
[None]	[None]	"Nil"	.17 or less***

Figure 1: Comparison of New and Previous Braking Action Information*

*The two left columns reflect the new system and terminology, effective Oct. 1, 2016. The two right columns reflect the previous system and terminology, now superseeded, presented strictly for comparative purposes.

** No official correlation between pilot-reported braking action terminlogy and Mu measurements exists under the previous or the new rules and systems, and sources vary slightly on these values. Under the new rules, a RwyCC of 0 is considered "Nil" braking action, rendering that runway closed to all flight operations.

*** Mu readings of less than .25 are considered unreliable and, thus, should be considered to indicate the potential of Nil braking action.

Assessment Criteria		Control/Braking Assessment Criteria	
Runway Condition Description	**RwyCC**	**Deceleration or Directional Control Observation**	**Pilot Reported Braking Action**
• Dry	6	---	---
• Frost • Wet (Includes damp and 1/8 inch depth or less of water) ***1/8 inch (3mm) depth or less of:*** • Slush • Dry Snow • Wet Snow	5	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
-15°C and Colder outside air temperature: • Compacted Snow	4	Braking deceleration OR directional control is between Good and Medium.	Good to Medium
• Slippery When Wet (wet runway) • Dry Snow or Wet Snow (any depth) over Compacted Snow ***Greater than 1/8 inch (3 mm) depth of:*** • Dry Snow • Wet Snow ***Warmer than -15°C outside air temperature:*** • Compacted Snow	3	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
Greater than 1/8 inch(3 mm) depth of: • Water • Slush	2	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• Ice	1	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
• Wet Ice • Slush over Ice • Water over Compacted Snow • Dry Snow or Wet Snow over Ice	0	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil

Figure 2: Table 1-1 of Advisory Circular 91-79A CHG 1: Operational Runway Surface Condition Matrix (RCAM) Braking Action Codes and Definitions

This table indicates what runway contamination conditions and deceleration/control observations correspond to each of the six Runway Condition Codes (RwyCC). The revised Pilot Reported Braking Action terminologies are also included.

NOTE: The unshaded portion of the RCAM is associated with how an airport operator conducts a runway condition assessment.

NOTE: The shaded portion of the RCAM is associated with the pilot's experience with braking action.

NOTE: The Operational RCAM illustration will differ from the RCAM illustration used by Airport Operators.

NOTE: Runway condition codes, one for each third of the landing surface, for example 4/3/3, represent the runway condition description as reported by the airport operator. The reporting of codes by runway thirds is expected to begin in Oct. 1, 2016.

approach and landing clearance). This newer report is relayed to the holding King Air charter flight, who then accepts a new approach clearance and lands uneventfully. This is in no way an unrealistic or uncommon scenario. Similar situations play out at airports around the world regularly, often with ATC being proactive in soliciting braking action reports while indirectly letting landing aircraft know what approaching aircraft might require to "get in." It's a game that pilots, controllers and regulators know happens and those who believe otherwise are

either in denial or do not operate in the system often enough to have seen or heard it unfold firsthand. Each aircraft is likely reporting in a perfectly honest way, but runway conditions and braking actions do not affect all aircraft types the same. So, as one might imagine, such situations can also lead to overrun incidents or accidents as aircraft of varying capabilities utilize the reports of aircraft with very different performance parameters. The FAA has recently made several significant changes to bring more clarity, and more rigid requirements to Takeoff and Landing Performance Assessments (TALPA) and runway condition and braking action reporting. These changes address such issues as the example given, as well as rejected takeoff situations.

The TALPA Initiative

Beginning on Oct. 1, 2016, a new format of Field Condition (FICON) Notices to Airmen (NOTAM) will be utilized to report runway conditions determined via the new TALPA procedures at federally obligated airports. These changes are a result of findings from the TALPA Aviation Rulemaking Committee. Originated in 2006, the project was designed to provide airport operators with a common method for accurately determining contaminated (non-dry) runway conditions, in order to reduce the risk of runway overruns. Such information can then be utilized by pilots, dispatchers, operators and other flight planners to calculate minimum runway lengths for landings or rejected (aborted) takeoffs, when combined with the manufacturer's aircraft specific data. In overly simplistic terms, the former subjective assessments of runway conditions have been replaced with more objective means. Now, runway conditions are based on both the type and depth of the contaminate and are expressed using a corresponding runway condition code [see Figure 2]. Such specific information can be better applied to aircraft-specific performance charts for calculating the most accurate runway requirement data.

Braking Action Changes

Also effective Oct. 1, 2016, Mu reports will be replaced by Runway Condition Codes (RwyCC), which may take Mu measurements into account, but will also incorporate specific contamination types and depths. While braking action reports from pilots will continue to be solicited and used, the acceptable terminology has changed. The most significant change is that the term, "Fair" has been replaced with "Medium" to better conform to International Civil Aviation Organization (ICAO) standards [see Figure 1]. Along with this, a report of "Nil" will no longer be acceptable for an active runway. Instead, a braking action of "Nil" (as ascertained by pilot reports or RwyCC) will render that runway unusable and necessitate its immediate closure. This eliminates the option of using such a runway by operators who could otherwise do so legally; a decision which has led to many runway overrun incidents and accidents in the past. This has been especially true with turboprop operators who often rationalized the use of a runway with Nil braking action by considering their slower landing speed, reverse thrust prop capabilities (beta plus power), and a greater headwind or less crosswind on that runway. Accident history has proven those perceived "positives" do not outweigh the negative of little or no runway braking action. Thus, any such runway is now considered closed, by definition, and cannot be considered re-opened until braking action can be measured and reported as something greater than "Nil."

Information Assessment: Good!

Many regulatory and operational changes made by the FAA in the past have been accompanied by corresponding educational information that is difficult to find or challenging to translate from regulatory language. Not so with TALPA and the changes highlighted here. Below are just a few of the many resources available for a deeper understanding of these changes and what they mean for your operations and missions:

- The FAA website has a page dedicated to TALPA with a multitude of links corresponding to specific operators and the various regulatory sections effected. See URL: *http://www.faa.gov/about/initiatives/talpa/*
- Advisory Circular 25-31 "Takeoff Performance Data for Operations on Contaminated Runways," dated 12-22-2015
- Advisory Circular 25-32 "Landing Performance Data for Time-of-Arrival Landing Performance Assessments," dated 12-22-2015
- Advisory Circular 91-79A, dated 04-28-2016
- Current edition of the Aeronautical Information Manual (AIM) KA

Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI & IGI. In 26 years of flying, he has logged over 16,000 hours total, over 5,500 hours of instruction-given, and over 2,500 hours in the King Air and BE-1900. As owner of Progressive Aviation Services, LLC, *(www.progaviation.com)*, he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he also flies the Airbus A-320 series for an international airline and holds eight turbine aircraft type-ratings. Matt is one of less than 25 instructors in the world to have earned the "Master Certified Flight Instructor" designation for seven consecutive two-year terms. He can be contacted at (414) 339-4990 or *matt@progaviation.com*.

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MAINTENANCE TIP

Will Your Flaps Create a Flap?

by Dean Benedict

Not long ago, I had four King Airs in a row that had flap issues. Three of them were in the hangar at same time. A contagion of flap failures? Flap Cooties? Let's hope not.

F90 – No Washers

First, there was an F90 in for a pre-buy inspection, and we found that most of the flap roller bearings were worn out. We had to replace six out of the eight bearings. Worse yet, every roller bearing was missing the all-important Teflon washer – not one to be found! Also, the flaps were wildly out of rig. The only thing more shocking was the fact that just 10 hours earlier, this King Air had been through a Phase 1-4 inspection (at an authorized service center, no less)! Good thing the prospective buyer arranged his own pre-buy in spite of the recent inspections, because this King Air had plenty of other issues to be worked out before the deal closed.

Model 300 – Roller Bearings

Concurrent with the F90 issues, a King Air 300 was in for a phase inspection and needed all of its roller bearings replaced – making it another four roller bearings we changed. The 200s, 300s and 350s have the Teflon washer/roller bearing setup on the outboard flaps only; the 90s and 100s have it on all four flaps. Each flap takes two washers and two bearings.

This example of roller bearings reveals the middle one is shown shoulder-down, the outside ones are shoulder up and show the outer ring around the center post; the one on the left is new.

I wasn't surprised at having to replace all the roller bearings on this 300. They caught my attention at the last inspection and I knew they were nearing the end of their useful life. You can't tell if a bearing is bad just by looking at it though, you have to hold it in your hand and feel it.

The outer ring must slide smoothly around the center post with no grinding or rough patches, and the center post must stay firmly in place. The center post in a worn out bearing is wobbly and shifts back and forth.

A B100 – Damaged Flap Track

Across the hangar, a King Air B100 in for phase and gear inspections had one seriously messed up flap with a bad roller bearing and no Teflon washer. Actually, the washer was installed on the wrong side of the flap track where it does no good and does not fit. The washer's interior hole is nearly one inch in diameter to accommodate the center post of the roller bearing. Installed on the wrong side of the flap track, this comparatively giant washer was hanging on a bolt less than one-fourth-inch in diameter.

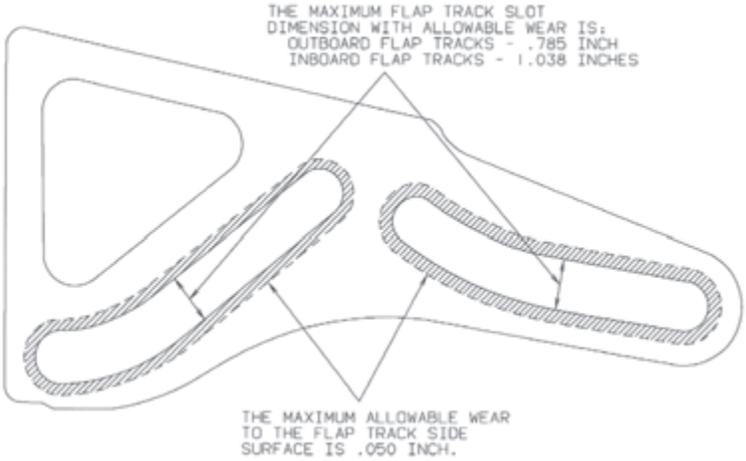


Diagram of the flap track assembly from the maintenance manual. Although this diagram is from the King Air 200 manual, all models of King Airs have the same flap track.

Without the Teflon washer in place to protect the side surface of the flap track, the shoulder of the roller bearing gouged into it, metal-on-metal. This is the worst possible situation, and the damage looked pretty profound. There is a diagram of the flap track assembly in the maintenance manual (see example above); the aft flap track is on the right. The shaded gray area on the diagram is where the roller bearing shoulder scrapes and gouges if the Teflon washer is worn out or missing. The maximum allowable wear to the flap track side surface is .050 inch. It wasn't looking good and I was worried.

An aft flap track assembly on a King Air, which extends pretty far into the wing structure and means several labor hours if an assembly needs replaced.

The flap track assembly extends pretty far into the wing structure. If condemned, it means big bucks to change it as many hours of labor are required. To be absolutely certain about this flap track, we stripped the paint and measured carefully. It was exactly at max limits for wear.

Whew! The owner dodged a big expensive bullet on that one! But if there is no more leeway left on this flap track, how much longer will it last? I don't have a crystal ball, but it will last longer than you'd think *provided it is regularly inspected and properly maintained*. The washer and bearing should be replaced before they get really bad, and the dry lube called for by the maintenance manual must be applied.

You can check your own King Air to see if the washers and rollers are in the correct position. For a 90 or 100 model, put the flaps down and stand at the trailing edge of any flap. For a 200, 300 or 350, choose either outboard flap.

The odd thing about this squawk on the B100 is that the other seven roller bearings were fine; they had Teflon washers properly installed. Only one out of eight was bad, and it was really bad. To do that much damage to the flap track, it had been that way for a while. I wonder how many mechanics, supervisors, inspectors and QC personnel missed it. No shop is perfect, but this was another shocker. About 65 hours prior to our discovery, this King Air went through a Phase 1-4 pre-buy inspection and an Airworthiness Certification, as it had been out of the United States prior to the sale. It was inspected and certified by a company-owned shop that had the aircraft for seven months.

The B200 – Failed Bearing

On the heels of the three other King Airs, came a B200 for a Phase 1-2 inspection. We found a failed roller bearing at the inboard position of the R/H outboard flap. The bearing had just begun to scrape the flap track bracket. This is a sure sign of bearing failure and easily found upon close inspection. I wasn't expecting to find a bad bearing on this King Air, but it is *exactly* why we do regular inspections!

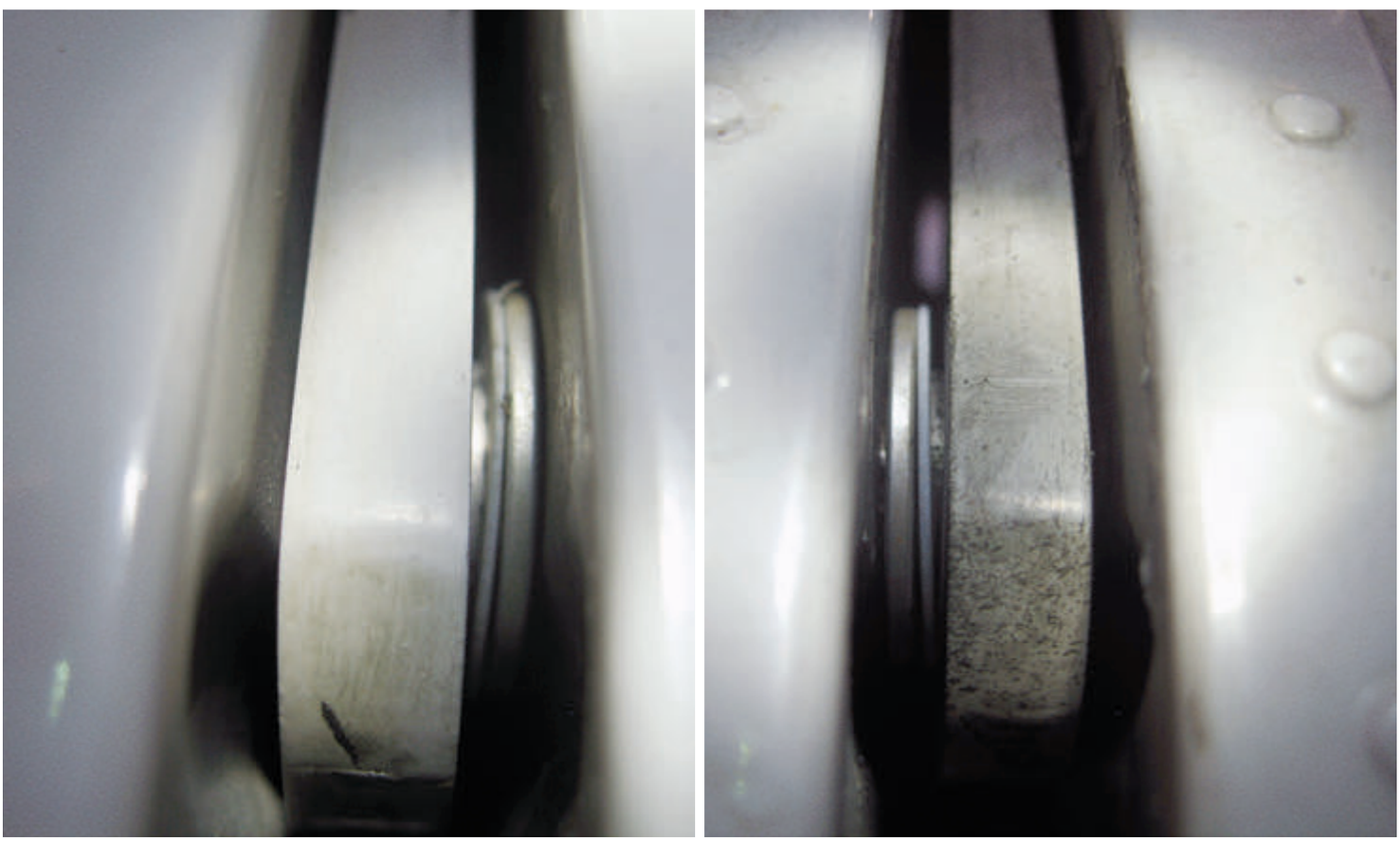
Some things degrade slowly and you can keep a watchful eye until it fails or is out of limits, as in the 300 discussed earlier. Other times failure is sudden and unanticipated. Periodic inspections coupled with the proper remedy help keep sudden problems from escalating into extensive and expensive repairs.

Flap Self-Check

You can check your own King Air for Teflon washers and you can see if the washers and rollers are in the correct position. For a 90 or 100 model, put the flaps down and stand at the trailing edge of any flap. For a 200, 300 or 350, choose either outboard flap.

Forget inboard versus outboard and left wing versus right wing. Just look at the flap from the trailing edge. A flashlight may be helpful. There's a flap track on each side, coming out of the wing structure. It runs between two brackets which are attached to the flap itself. The brackets closest to the outside edge of the flap I'm calling the outer brackets and the ones closer to the center of the flap I'm calling the inner brackets.

Shift the flap to the right to get a better view of the flap track on the *left* side. Between the track and the inner bracket, you can glimpse the roller bearing; the edge of the shoulder looks silvery. The Teflon washer is skinnier than the shoulder and white-ish. It goes around the bearing and lies flat between the bearing shoulder and the flap track.



A view of the flap track on the left side (shown above, left). Between the track and the inner bracket, you can see the roller bearing and Teflon washer (white-ish in color). The flap track on the right side (shown above, right) should be a mirror image of what's on the track's left side. The roller bearing is always between the flap track and the inner flap bracket, and Teflon washer is always between the bearing shoulder and the track.

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Now shift the flap to the left and check the *right* flap track. The set-up should be a mirror-image of the other side. The roller bearing is between the inner bracket and the track; again, the shoulder is thicker than the washer and has a silver appearance. The thin white Teflon washer lies between the bearing shoulder and the track.

This is the proper set-up, regardless of whether it's an inboard flap or an outboard flap. The roller bearing is always between the flap track and the inner flap bracket. The Teflon washer is always between the bearing shoulder and the track. That wasn't hard, was it?

Flap Movement

You just saw that the flap will shift a little bit, side to side. This is normal and desirable. The flap should also move up and down a tad, maybe an eighth- to a quarter-inch of movement. It shouldn't be totally rigid in place. If it is, the flap rigging needs attention. Put this on your squawk list.

Wind Load

Your flaps take a beating at all times during flight. When they're down, they get maximum wind load. The wind pushes against the flap which presses the bearing against the top edge of the flap track slot.

When the flaps are up and you are cruising at altitude, the flaps are still getting buffeted about in all directions: up, down and side to side. In fact, the greatest wear and tear on the flap track slot happens in the flaps-up position. Over thousands of hours of flight time, there is gradual wearing away of the flap track slots.

Of much greater concern, however, is a damaged flap track or bracket caused by failed roller bearings and/or bad or missing Teflon washers. This damage is preventable with good and regular maintenance. You can add the flap self-check described earlier to your pre-flight routine. Why not? You know the saying about an ounce of prevention versus a pound of cure?

I'd hate to see your flaps create a flap.

Happy flying. KA

Dean Benedict is a certified A&P, AI, with over 40 years of maintaining King Airs. He owned and managed Honest Air Inc., a maintenance shop specializing in Beech aircraft with an emphasis on King Airs, for 15 years. In his new venture, BeechMedic LLC, Dean consults with King Air owners and operators on maintenance management, troubleshooting, pre-buys, etc. The Honest Air operation merged with Apex Aviation (KHND) where Dean oversees all King Air and Beechcraft activity. He can be reached at *drdean@BeechMedic.com*.

Current News Regarding Aviation

PAUL BOWEN PHOTOGRAPHY

by Kim Blonigen

Deadline Coming Soon for Part 135 Operators and EASA SMS Requirements

Per a new European Aviation Safety Agency (EASA) regulation, U.S. Part 135 operators will need an approved safety management system (SMS) program to fly throughout Europe under the Third Country Operators (TCO) regulation. EASA defines a third party operator as any operator holding an air operator certificate issued by a third country.

Under the new EASA regulation, Part 135 operators based outside of Europe are required to apply for and obtain TCO authorization from the European Aviation Safety Agency by November 26, 2016 to operate in Europe. One fundamental part of the International Civil Aviation Organization's (ICAO) Standards and EASA's risk-based considerations for TCO acceptance is State (FAA) oversight. Part 135 operators will require an authorization when flying to Europe under TCO. EASA has said they will not require an authorization under the TCO for fractional operations.

EASA's SMS requirements in TCO authorizations are based on ICAO standards. ICAO standards in Annex 19 require that an operator's SMS must be "acceptable to the State" (U.S. FAA). Because of this requirement, the FAA does not currently recognize third-party sponsored SMSs for acceptance. For more information, contact the AFS SMS Program Office.

FAA Moving Toward Five-knot Speed Adjustments

Pilots may have already experienced ATC providing speed adjustments in five-knot increments rather than 10 knots. The FAA released a *guidance* in late August which it says is part of its effort to increase its performance-based navigation activities, in an effort to support NextGen capabilities.

The National Business Aviation Association (NBAA) remarked that the change is designed to help make the airspace more efficient, as the FAA moves from distance-based separation to time-based metering of air traffic, and it foresees it eventually being used throughout the National Airspace System.

The NBAA anticipates the change initially will be more noticeable on approaches, but eventually will be used throughout the National Airspace System.

NBAA Provides Comments on FAA's Proposed Airport SMS Requirements

The NBAA recently stated that it "supports the adoption of safety management systems (SMS) at larger commercial airports," but recently expressed concern that "the FAA's proposed airport SMS rule would require SMS programs at smaller airports with no international scheduled airline service."

The SMS for Airports rule began development by the FAA in 2006, to harmonize U.S. airport regulations with International Civil Aviation Organization standards, and the industry has been awaiting this rule since 2010.

A supplemental notice of proposed rulemaking, released by the FAA in July 2016, mandated SMS for several types of airports, including small, medium and large hubs and airports with more

PAUL BOWEN PHOTOGRAPHY

than 100,000 annual operations. It also proposes SMS programs at airports identified by Customs and Border Protection (CBP) as ports of entry, landing-rights airports or user-fee airports.

In comments on the draft rule, it stated "NBAA recognizes and promotes the value of SMS among its operating members and believes in the importance of growing the safety culture at airports covered by FAA's proposal," said Alex Gertsen, NBAA's director of airports and ground infrastructure. "While safety is paramount, NBAA is concerned the FAA's proposed criteria for applicability of SMS could present a significant challenge to some of the smaller airports that have CBP presence, but no international scheduled airline service. The requirement could also serve as a barrier to airports that desire to establish CBP services in the future."

In addition, NBAA asked the FAA to clarify that the criteria requiring an SMS would cover only Part 139 airports. In 2010, the FAA proposed that all Part 139 airports (544, at the time) participate in SMS, and the industry expressed concern with the proposal's scope. The revised proposal, as written, covers 268 airports. There are approximately 70 airports with CBP presence but no other criteria, which would be required to implement an SMS under the SNPRM.

The NBAA wants owners and operators to know that the FAA is also soliciting comments on a draft advisory circular (AC) that will accompany its final rule. NBAA members who wish to provide comments on the AC and share how airport SMS requirements may impact them, can email Alex Gertsen at *agertsen@nbaa.org.* KA


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Elevator Trim Tab Alignment

by Tom Clements

A recent thread on the *BeechTalk* internet forum prompted the idea for this article. All models of King Airs, for many years now, require that the pilot include a first-flight-of-the-day preflight check of the accuracy of the airplane's pitch trim indicator.

In the 1970s, in England, a King Air 90 model nearly had a loss of control on initial climb after takeoff because the pitch trim indicator in the cockpit was incorrect by a wide margin. Not realizing that the trim actually had a large "Up" setting, the pilot was surprised as the nose kept wanting to rise and only a forceful control wheel push prevented a departure stall. An investigation found that a previous pilot had manually forced the elevator trim wheel past its travel limit causing the trim cable to find a position that bore little resemblance to the cockpit indication. First the British aviation authorities, then the FAA, issued Airworthiness Directives that required (1) trim indication accuracy to be checked and verified, (2) red limit marks to be painted onto the trim indicator wheel with instructions not to force the wheel past the limits, and (3) a procedure for verifying trim indicator accuracy during a preflight inspection.

Before I continue, I should remind my readers that the 100-series of King Airs do not have elevator trim tabs. Instead, trimming in the vertical axis is accomplished by moving the horizontal stabilizer … just like on a J-3 Cub or a Cessna 180. But unlike the Piper and Cessna, the stabilizer in the King Air 100, A100, and B100 is moved by an electric motor, not by a manual cable, operating the jackscrew. In fact, there are two motors, "Main and Standby," with appropriate cockpit activation switches.

The 100-series airplanes have no manual pitch trim wheel on the side of the power quadrant and the indicator, down on the pedestal, is an electrically driven pointer moving on a scale. The trim is so powerful on these models that a takeoff-out-of-trim warning horn comes as standard equipment and operates independently of the indicator, sensing actual stabilizer position. There is a small pointer attached to the center of the leading edge of the left side's stabilizer and a rivet fastened to the fuselage. When the pointer points smack dab at the rivet, zero trim is obtained. The *Normal Procedures* checklist instructs the pilot to leave the trim at the zero position after the cockpit preflight checks are completed. Then, one of the steps on the exterior walk-around is to verify that the pointer and the rivet are side-by-side … or at least very close!

The stripes specified to show pilots if the elevator trim tab is aligned – red triangles on the stabilizers and a single red stripe on the elevator tab pushrods. When an apex of the triangle points to the leading edge of the band, the trim should be at zero.

So although the incidence of a misadjusted pitch trim cable cannot exist in a 100-series King Air, it is still important that the crew crosschecks indictor versus actual trim position.

There is a big difference between the elevator trim tabs on most of the 90-series and those on the 200- and 300-series. The tabs of the T-tail King Airs (including the F90 and F90-1) have no servo nor anti-servo action; the rest of the 90-series have tabs that operate with an anti-servo action. Remember, a servo tab assists control surface movement whereas an anti-servo tab resists movement. The anti-servo elevator trim tabs on 65-90s, A90s, B90s, C90s and E90s are geared such that when the elevator goes up, the tab goes further up, and when the elevator goes down, the tab goes further down. At an exact zero, neutral trim setting, the trailing edge of the elevator and the trailing edge of the trim tab are in perfect alignment only when the elevator is in its neutral position, streamlined with the horizontal stabilizer.

Hence, one way to check the accuracy of the pitch indicator wheel in the cockpit is to set it at zero and then to manually lift the elevators into a neutral position and verify trailing edge alignment. But if you are quite short or if the tail is hanging out over some drainage ditch at the airport, this can become impossible to do. Only with a helper in the cockpit who could pull the control wheel back halfway, could the visual check be accomplished. Recognizing that we may be alone with no cockpit helper, the FAA devised a fool-proof method that covers all the conditions, even when the tail is unreachable. You know what it is: Those funny-looking stripes on the elevator tab pushrods and on the bottom of the horizontal stabilizer.

Knowing that the trailing edges will not align, due to the anti-servo action of the tab, when the elevators are in the at-rest, down position, the stripes are applied so that they do indeed align when in that down position.

And, wow, have I seen some weird stripes through the years! I think some stripe-painters didn't get copied on the memo and did not realize what was to be accomplished here! The stripes should be red with triangles painted on the stabilizers and a single red band painted on the pushrod (see photo on oppostie page). When an apex of the triangle points to the leading edge of the band, the trim should be at zero.

Now for the T-tails. Since the tabs here have no anti-servo nor servo action, the alignment between the elevator and the tab does not change as the elevator travels up and down. So no painted stripes are needed nor desired. Instead, the pilot merely leaves the trim wheel in the cockpit at zero and visually confirms that the trailing edges of tab and elevator are in side-by-side alignment.

(Caution for the F90-series pilots: Realize that the entire range of trim settings the F90 has are "Up" settings. Zero trim is as far "Down" as it goes. Strange, but true. So you must take care to reset your normal takeoff trim setting after the exterior check is completed.)

There is one exception about setting zero trim for the visual check of the 350 or B300. Due to its longer fuselage, it was determined that neutral trim actually needed to be slightly nose down. Zero trim, therefore, has the trim tabs just slightly up, with their trailing edges higher than the trailing edge of the elevators. (Trim tab up … elevator down … nose down. Make sense?) Therefore, the 350's procedure is to set the trim wheel indicator in the cockpit to a two degrees nose up (+2°) position before doing the exterior walk-around. Now the trailing edges should align perfectly.

I hope this article gives you a better understanding of this important preflight procedure … why it's there and how it is accomplished.

Fly safe!

Note: In the June issue of *King Air*, my friend and colleague Dean Benedict wrote a fine article about the Overspeed Governor's Test Solenoid and its disconcerting tendency to stick in the test position. I'd like to add a comment about that.

Not many pilots realize that the speed at which the Overspeed Governor moves into the test setting is extremely different than the speed at which it resets back to normal. It comes down fast, but it resets back to normal very s-l-o-w-l-y. It's never a good idea to have the propeller turning at a high speed when the test switch is activated. Man, it's like someone did a forceful, sudden yank back on the prop lever! But the reverse is not true. When the test switch is released, the RPM just creeps back up. So I strongly suggest, and teach, that after you have done an OSG test, let go of the switch while power is still applied and watch for the creep up to begin before reducing power. Now you know with 100 percent certainty that the solenoid has not stuck. For what it's worth, I also believe that the extra power and vibration of the higher RPM still existing when the switch is released makes it more difficult for the solenoid to remain activated/stuck. KA

King Air expert Tom Clements has been flying and instructing in King Airs for over 44 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, go to *www.flightreview.net*. 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 kblonigen@cox.net.

The Racer's Edge Part One

Walter H. Beech possessed a highly competitive spirit that drove him to win, and never was that passion expressed more fully than during his early days competing in air races and aerial exhibitions.

by Edward H. Phillips

Suddenly, the starter's flag dropped and the race began. One after another the pilots shoved throttles all the way forward. In just seconds, the closely-packed swarm of flying machines was airborne and headed for the first turn pylon one mile away. As the large crowd of spectators cheered for their favorite aviator, to their amazement they saw one airplane still sitting at the starting line. It was the Travel Air *Special.* The biplane's pilot, a young aviator from Wichita, Kansas, named Walter Beech, had asked race officials if he could takeoff last. Despite being puzzled at such a bizarre request, they granted his wish.

As the flock of airplanes rounded the pylon, Beech gave the engine of his eager steed full throttle, and 160 horsepower quickly thrust the biplane into the air. His competitors had a large lead over Beech, but that is exactly what he wanted. With a 100 mph wind whipping his cheeks as he rounded the first pylon alone, Walter kept his eyes on the scattered formation of ships far in front of him. In keeping with his race strategy, Beech eased back on the throttle so the *Special* would hold its position in last place.

The first lap of the 50-mile event passed quickly, then the fifth and then the tenth. By the 15th lap, Beech had caught up with the slower airplanes and, despite having throttled back a little more on the previous lap, was slowly gaining on the race leaders. With only a few laps remaining, Walter eased the throttle forward as the black and gold Travel Air quickly passed one competitor and then another. By now the excited crowds were on their feet as they watched Beech close in on the front runners. He eyed the next victim, added a little more power, and took over third place. None of his competitors thought the Travel Air would be so fast! As the final lap began, Beech decided the time had come to demonstrate the *Special's* superiority over the other entrants. He gave the Curtiss C6A engine full throttle and the biplane easily overtook the leader and soon left the pack in its wake. Just as he had planned it, Walter flew the final lap all alone and took the checkered flag after completing the race in 29:26.

When the Tulsa Air meet ended on September 6, 1925, Beech and other pilots from the Travel Air Manufacturing Company including Clyde Cessna, Lloyd Stearman and Mac Short, had collected five highly polished trophies – three for first place victories and two for second place. The six-day event was sponsored by the *Tulsa Daily World* newspaper and was well attended by the local population. Although Beech did the majority of flying,

A young Walter H. Beech posed with his ever-present pipe beside a Laird *Swallow*. E.M. Laird described Beech as a "pilot of limited experience" when he went to work for Laird and Jake Moellendick in 1920. Beech, however, soon proved himself a worthy employee as his flying skills improved. By 1923, he was well known throughout the Midwest as a competent pilot and air racing competitor.
(EDWARD H. PHILLIPS COLLECTION)

it was the *Special* that stole the show. It had easily beaten the other airplanes, including the biplanes entered by one of Travel Air's chief manufacturing competitors, Waco (Weaver Aircraft Company) based in Ohio. Back in July, Stearman and Short had approached Beech about building a "speed ship" that would be capable of at least 120 mph. Walter soon became excited about the proposal and enthusiastically gave his consent to design and build the airplane. Beech knew that in the infant airplane business, speed was paramount. It slashed long-distance travel times to hours instead of days, it was aviation's greatest asset, but above all, speed sold airplanes.

The *Swallow* was powered by a war-surplus Curtiss OX-5 engine and featured a front cockpit for two occupants. Slow, heavy on the controls but well built, the *Swallow* was E.M. Laird's first truly successful commercial airplane design. More than 40 were sold between 1920-1924. Laird and Beech were responsible for many of those sales. (EDWARD H. PHILLIPS COLLECTION)

By 1925 Walter Beech was no stranger to air racing and exhibition flying. By July 1921, when he went to work for the E.M. Laird Company in Wichita, Beech had accumulated about 200 hours in the air since learning to fly in 1919.[1] After serving in United States Army Signal Corps during World War I as an aircraft engine mechanic at Rich Field near Waco, Texas, Walter was put on the company payroll in July 1921. Laird referred to Beech as "a pilot of limited experience" and Walter soon proved it by demolishing a *Swallow.* The loss of the airplane was a serious financial blow, but both Beech and Laird's company managed to survive the debacle.

Walter's introduction to aerial competition came when he and a few other employees assisted Laird in construction of a biplane designed strictly for air racing. Plans called for the ship to have a wingspan of only 20 feet and be powered by the ubiquitous Curtiss OX-5

engine rated at 90 horsepower. Laird estimated that the diminutive biplane would easily exceed 100 mph. The OX-5 powerplant, however, was replaced by a 150-horsepower Wright Martin Hispano-Suiza that propelled the racer to a maximum speed of about 125 mph. "Matty" and Walter Beech took turns flying the airplane in local and regional air races and were rewarded with a checkered flag at many of those events. The valuable prize money helped keep the company in the black. Walter would not forget the value of racing and its ability to contribute to the company coffers.

Emil Matthew "Matty" Laird was a self-taught aviator and aircraft designer who played a critical role in establishing Wichita, Kansas, as an important city for the growth of commercial aviation in the early 1920s. Chicago-bred, in 1919 Laird joined forces with Kansas oilman and aviation visionary Jake Moellendick to build the *Swallow*.
(EDWARD H. PHILLIPS COLLECTION)

Beech flew the racer to victory at a race in nearby El Dorado, Kansas, for airplanes powered by engines in the 150-horsepower class, and later placed second in a race at St. Joseph, Missouri, attaining a speed of 117 mph. By December 1921, Laird and Beech (particularly Beech) had won 14 air racing events during the spring, summer and early autumn months of that year. In addition, Walter and other company pilots earned money flying passengers on "joy rides" over Wichita. Sunday afternoons proved to be particularly profitable because large crowds came to the local flying field to observe flying and parachute jumping activities.

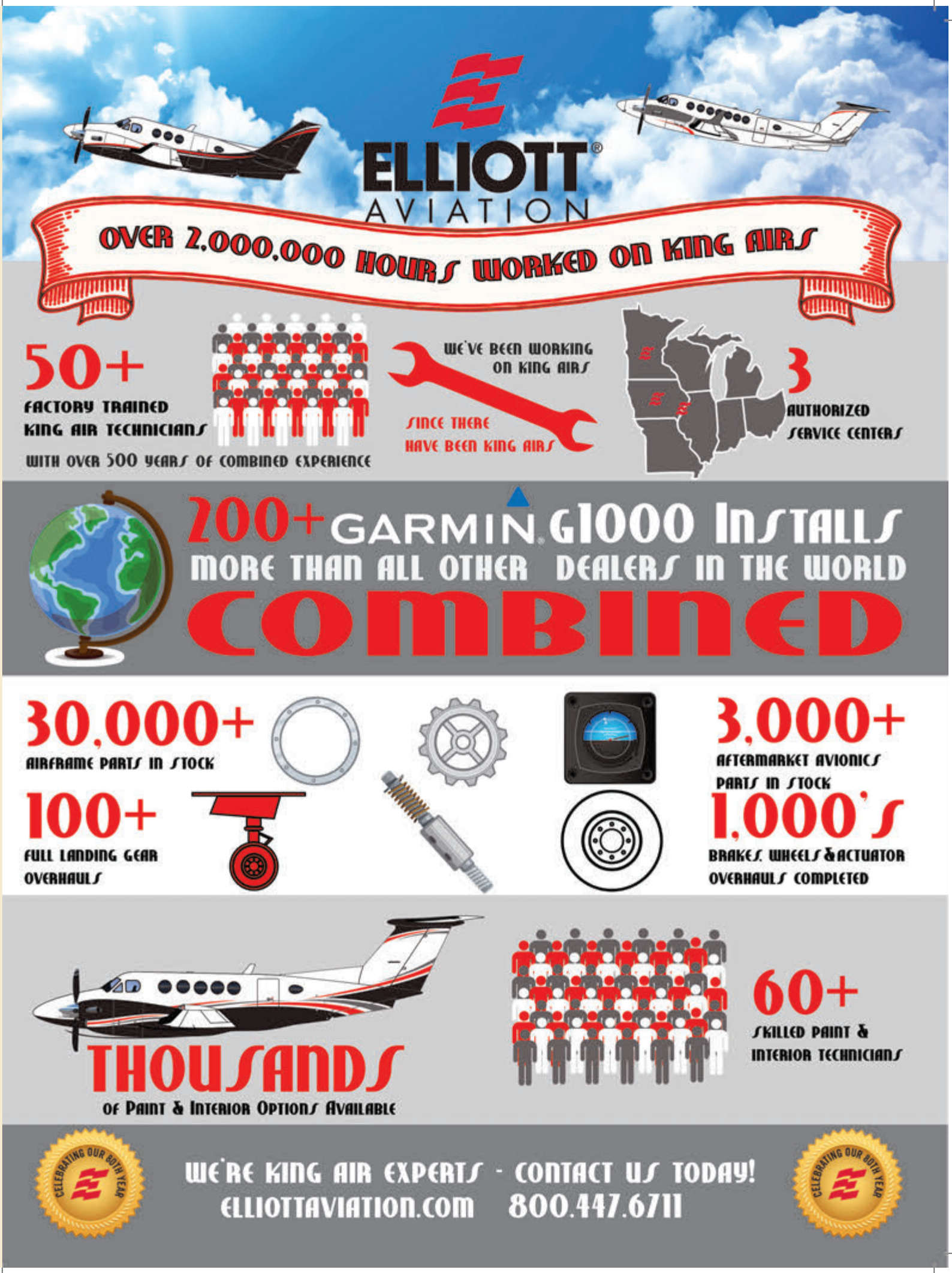
Laird and Beech were opposites in many ways, but both men shared a common passion for aviation. Whereas Walter was gregarious, always at ease speaking with total strangers, "Matty" was content to remain in the background. Despite their differences they learned to work together for a common cause – keeping Laird's airplane company in business. As Beech's flying experience increased, so did his talent for winning races and exhibitions. He flew a Swallow to victory at an air meet in Monmouth, Illinois, and won the aerobatic contest in addition to clinching first place in the race for OX-5-powered airplanes. Gradually, the press began to take notice of the novice aviator from Wichita. One newspaper reporter wrote that Beech "startles pilots and onlookers, first by a 2,000-foot tailspin, then by 22 consecutive loops that set the throng on fire, and later by five Immelmann turns and a direct sidewise flight before landing."[2]

In June 1922, Walter continued his winning ways by earning $300 during an exhibition at El Dorado, Kansas, and a team of aviators from Wichita flying won first prize in every event they entered. Not to be outdone by his contemporaries, Beech placed first in the dead-stick landing competition, won the aerobatic contests and a race for airplanes in the 150-horsepower class, placed first in the Free-For-All event and won the race for *Swallow* biplanes. As the summer wore on, Walter just kept on winning. In July he took home $750 at an "air meet" held in Detroit, Michigan, and in September earned a whopping $1,000 by finishing first in a 250-mile race held at Okmulgee, Oklahoma. In October, Beech returned to Detroit and captured first place and another $1,000 for flying a commercial airplane with the heaviest load over the longest distance. In addition, that month he completed a highly successful 1922 racing season by winning the "On To Detroit" race, pocketing another $500.

Despite Walter's success at air shows and exhibitions, by 1923 the E.M. Laird Company was in financial trouble. To make matters worse, Laird and business partner Jacob Moellendick did not agree on how the business should grow, and in October Matty resigned, returned to Chicago and established the E.M. Laird Airplane Company in rented facilities near Ashburn Field. Meanwhile back in Wichita, Moellendick promoted Lloyd Stearman to chief designer and Walter Beech managed manufacturing and sales.

As 1924 drew to a close, Beech and Stearman resigned to build a new three-place, open cockpit biplane recently designed by Lloyd. With the help of a few local businessmen and thanks to a healthy injection of money from pioneer aviator Clyde V. Cessna, they created the Travel Air Manufacturing Company, Inc. In March 1925, the first Travel Air Model "A" made its initial flight. Walter Beech knew he would have to return to the cockpit and earn Travel Air some hard cash if it was to survive its first year of existence.

Beech had helped make the *Swallow* a household word in the fledgling aviation community, and he was quick to put that same expertise to work in demonstrating the Model A. Winning races and competing in events at aerial exhibitions would bring in much-needed cash to pay the company's small workforce. There were plenty of air races, and Walter wasted no time getting the new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Walter Beech (left) congratulates aeronautical engineer Mac Short (center) and fellow pilot Lloyd Stearman on the rollout of the Travel Air *Special* they designed for air racing. Late in 1924, Beech, Stearman and Clyde Cessna, in concert with a few local businessmen who believed in the future of aviation, combined forces to create the Travel Air Manufacturing Company. By 1925, when the *Special* flew for the first time, Beech was not only vice president of the company, but served as chief pilot and salesman. He flew the *Special* to victory at many air races and air show events to help meet the infant company's payroll.
(EDWARD H. PHILLIPS COLLECTION)

Travel Air before the eyes of the public. During the past four years he had built a solid reputation as a pilot and salesman, and his name was already well known not only in the Midwest United States, but on both coasts as well.

Fortunately, an excellent opportunity presented itself in September 1925 when Edsel Ford, son of Henry Ford, donated a special trophy made of gold and silver to the Detroit Board of Commerce. The Board planned to award the trophy (which stood four feet tall) as part of an "air tour" intended to prove the reliability of the airplane as the latest mode of transportation. Officially designated "The National Air Tour for the Edsel B. Ford Reliability Trophy," the name was often shortened to merely "the Ford Tour." It was to be an annual event aimed chiefly at promoting advancements in aviation design, manufacture and performance, as well as development of a national infrastructure to support the fledgling aircraft industry.[3]

This well-known photograph captures the essence of aviator Walter H. Beech. By the time he retired from flying in 1945, he had accumulated more than 10,000 hours in the air. (EDWARD H. PHILLIPS COLLECTION)

Each airframe manufacturer desiring to compete in the tour was required to certify that their aircraft were safe and structurally sound. Pilots had to promise they would not drink alcohol in any form during the event, and assure officials that they were in good health. Travel Air was well represented at the first Ford Tour: Walter Beech would fly the C6A-powered "Special," and two Model A biplanes would be flown by local airman Francis "Chief" Bowhan and E.K. "Rusty" Campbell, one of Travel Air's first distributors.

Plans called for the tour to depart Ford Airport in Dearborn, Michigan, on September 28 and end at Ford Airport on October 4 after flying a distance of 1,775 miles and visiting 13 cities in seven states. The first Ford Tour was deemed a success despite foul weather that had hindered pilots along the route. Among the 11 entrants who finished with a "perfect score" (there were no first, second or third place prizes) were Beech, Bowhan and Campbell. All three received $350 in cash and had their names engraved permanently on the trophy.

A year later, Walter Beech and navigator Brice Goldsborough took top honors at the second Ford Tour, earning Travel Air the handsome sum of $2,500. Beech added more than $1,000 to that amount, thanks to small cash awards he won during the tour, and flew with $3,850 that the company sorely needed to strengthen its bank account.

In addition to his success in the Ford Tour, Beech continued to win cash at local and regional events. In May 1926, a major air show was held at the flying field on East Central Avenue to celebrate the inauguration of air mail service to Wichita. Large crowds came to watch the air racing, and Walter Beech was right in the thick of it. He won the "Free-For-All" event flying a Model BW powered by the new Wright J-4 static, air-cooled radial engine rated at 200 horsepower. Just as he did at the Tulsa races in 1925, the press reported that Walter "loafed" around the pylons for four laps, then "hit the throttle and walked away from everyone for the win."

A month later Beech flew a Travel Air powered by a Curtiss C6A engine to Flint, Michigan, where he competed in the "Fly-To-Flint" race, but had to settle for second place. He redeemed himself and Travel Air, however, in the Manufacturers Trophy Race. The course was not very long and was marked with the usual sets of pylons to indicate where turns were to be made. When the field of competitors took off in their ships, the crowds in the bleachers were aghast to see Beech flying his biplane so close to the pylons. All the other pilots were making wide turns, but not Walter. He loved every second of air race competition – it was in his blood.

By 1927, Beech was deeply occupied managing Travel Air and found little or no time for airborne competitions. He realized his racing days were numbered, but when a

In early 1929, Walter Beech was reportedly heard to lament that the U.S. Army Air Corps and U.S. Navy dominated air racing with biplanes powered by liquid-cooled, in-line, and air-cooled, static radial engines. At that time, the best Travel Air could offer was the Type 4D (shown) powered by a 225-horsepower Wright radial engine. Although it could be equipped with "speed wings" that increased maximum speed to 150 mph, it was no match for the military ships. (EDWARD H. PHILLIPS COLLECTION)

wealthy pineapple magnate in Hawaii offered $25,000 to the first commercial airplane to fly nonstop from California to the Territory of Hawaii, he decided to take an enormous risk. At his direction, Travel Air workers built two modified Type 5000 monoplanes for the flight, which came to be known as the "Dole race." One of those airplanes named the "*Woolaroc*" and sponsored by oilman Frank Phillips, was first to land at Wheeler Field after a flight lasting more than 24 hours. During 1928 Walter Beech spent a majority of his energy on the daily task of guiding Travel Air to new heights in sales. By that year, the modern factory on East Central Avenue boasted two buildings, and Beech had plans to build three more in an effort to increase manufacturing space and meet growing demand for Travel Air ships.

Although Walter's appetite for air racing had to take a back seat to running a major aircraft company, in 1929 he would become directly involved with a top-secret project to build the fastest Travel Air ever built – a racer that promised to fulfill his dream of victory at the National Air Races. KA

NOTES:

1. Laird, a self-taught designer from Chicago, had relocated to Wichita in 1919 to build a three-place biplane that was sold as the Laird *Swallow*.
2. The "Immelmann turn" was a maneuver developed by World War I German ace, Lieutenant Max Immelmann. It was executed by performing a half loop with a roll to level flight at the top of the loop. It was used in aerial combat to change direction and gain altitude against an opponent.
3. The idea for a national air tour began with Harvey Campbell, a member of the Detroit Board of Commerce. He recognized the publicity value of automobile tours (such as the "Glidden Tour" in 1904) that had centered on developing a highway system in the United States, and believed an aerial version would do the same for aviation.

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.

Blackhawk Launches New Engine Program for King Air 350 Series

Blackhawk Modifications, Inc. announced details of their newest XP Engine + Upgrade program for the King Air 350. The company is developing a Supplemental Type Certificate (STC) that will allow the installation and operation of the Pratt & Whitney Canada PT6A-67A engine to replace the existing PT6A-60A engines on the King Air 350 model. The Blackhawk program, called the XP67A Engine+ Upgrade, is currently installed on Blackhawk's King Air 350 that will be used as the STC test aircraft during the experimental flight process. The company anticipates receiving the STC in the second quarter of 2017.

The PT6A-67A engine is a 1200 SHP power plant that will replace the existing 1050 SHP PT6A-60A engine currently certified on the King Air 350 model. Blackhawk's STC will flat rate the 1200 SHP to the airframe limit of 1050 SHP allowing an operator to take advantage of more than 400 thermodynamic shaft horsepower per engine in climb and cruise settings (1825 ESHP). This higher thermodynamic rating will also improve takeoff and climb performance in high altitude and hot ambient temperature conditions.

The initial performance results have exceeded forecast projections. In hot climate conditions, the XP67A will climb from sea level to its service ceiling of FL350 in as little as 18 minutes – more than doubling the rate of climb. Typical cruise speeds are increased by up to 37 KTAS and can settle in at up to 340 KTAS if an operator chooses to fly at maximum engine power limits. Operators looking for increased endurance and range can throttle back and extend capabilities due to better specific fuel consumption ratings. Blackhawk's STC will include a new Flight Manual Supplement with full performance for flight planning purposes.

The company says it worked very closely with Pratt & Whitney to bring the PT6 engine model that will boost the King Air 350 to the next level, which pushes the aircraft above and beyond what can be achieved with many jets. The XP67A will attain jet like speeds,

can carry twice the payload much farther, and will burn a fraction of the fuel while lowering maintenance, operating and acquisition costs.

The PT6A-67A engine will require a more robust propeller assembly than what the PT6A-60A currently turns. Blackhawk has selected, and is now flying with, the German-designed five-blade natural composite propeller from MT. The blades have a diameter of 102 inches allowing for more ground clearance, have unlimited blade life that are field reparable and employ large nickel alloy leading edges for superior erosion protection. The ground RPM restrictions are removed as well as the Ground Idle Solenoid to allow smooth taxi operations. They also offer significant reductions in noise and vibration levels while demonstrating a positive contribution in overall performance. The Hartzell 105-inch diameter five-blade composite propeller is also likely be included in the initial certification plan as an option. Raisbeck Engineering is working on a migration path to upgrade their newly certified Swept four-blade aluminum propeller assembly to be compatible with the PT6A-67A installation, as well.

The XP67A initial certification plan will include all Pro Line II-equipped King Air 350s with the steam powered engine instruments. Blackhawk is working jointly with Garmin and anticipates G1000 compatibility as part of the initial STC. A separate certification program will capture the Pro Line 21 avionics package along with the 16,500 lbs. increased gross weight kit with extended range tanks.

Precertification orders are now being accepted for the XP67A. A $50,000 refundable deposit will secure an initial delivery position and lock in a precertification pricing rebate. Blackhawk has contracted with Pratt & Whitney to offer the XP67A under the Converter Exchange Program (CEP) and requires the core PT6A-60A engines to be returned. Qualifying core engines will be issued credit at $70 per hour/per engine for time remaining to the 3600 TBO. Contact Blackhawk for pricing details, credits and rebates specific to your King Air 350 at *www.blackhawk.aero* or (254) 755-6711.

Rockwell Collins' Pro Line Fusion® Upgrade Now Certified for King Air 350 in Brazil

Rockwell Collins' Pro Line Fusion® avionics upgrade solution for the King Air 350 equipped with Pro Line II has received supplemental type certificate (STC) validation from Brazil's National Civil Aviation Agency (ANAC). The same upgrade was certified by a Federal Aviation Administration (FAA) STC earlier this year.

The Pro Line Fusion upgrade for the King Air 350 provides turn-key compliance with airspace modernization deadlines such as ADS-B and transforms the flying experience with the largest widescreen primary flight displays available. The upgrade enhances the aircraft's value with the same icon-based, touchscreen technology found on new-production King Airs.

Rockwell Collins' Pro Line Fusion ushers in a new era for King Air 350 owners with:

- A fully loaded package of baseline equipment for operation in modernizing global airspace: ADS-B mandate compliance, SBAS-capable GNSS, localizer performance with vertical guidance (LPV) approaches, radius-to-fix (RF) legs and more
- Three 14.1-inch widescreen LCDs with advanced graphics, configurable windows, and touchscreen interfaces – matching the display configuration of the latest King Air models delivered from the factory
- Market-leading high-resolution synthetic vision as a standard feature, including Rockwell Collins' patented airport dome, and extended runway centerlines with mile markers to better orient the pilot from top of descent through final approach
- Touch-interactive maps with eyes-forward flight planning, high-resolution topography, real-time onboard weather radar overlays, obstacles, and special-use airspace and search patterns for expanded situational awareness and reduced workload
- Geo-referenced electronic navigation charts that display own-ship aircraft position for enhanced situational awareness during approaches
- Easy and fast database updates using a standard USB drive port on the front of the displays

To find out more, visit *www.rockwellcollins.com*.

Jeppesen Improving SID/STAR Charts

Jeppesen recently gave a preview of the changes to the company's SID (standard instrument departure)

and STAR (standard terminal arrival route) charts. According to the company, the improvements included input from pilots and human factors experts and are intended to help enhance pilots' situational awareness.

Improvements to the arrival and departure charts include introducing colors to identify what pilots consider to be the most pertinent information. The new chart design also incorporates graphics for key topographic features, and flight procedures on STARs and SIDs will be shown to scale to improve situational awareness. It also enables use of an "own ship" symbol when connected to a GPS.

Jeppesen plans to begin rolling out the new charts by year-end, starting in Europe.

TRU's ProFlight® Pilot Training Earns FAA Qualification for King Air 350 Pro Line Fusion Distance Learning Program

TRU Simulation + Training Inc. announced that customers of its ProFlight pilot training program for the King Air 350 now have the option to train at home through its FAA-approved distance learning option for BE-300 recurrent training. TRU's East Coast ProFlight Pilot Training center was the first to offer instruction on the new Pro Line Fusion-equipped King Air 350 aircraft and the only training provider to offer an online learning option for recurrent training.

The new distance learning option permits the customer flexibility to receive 100 percent of their aircraft systems training online, allowing the customer to focus all time spent at the training center towards simulator training scenarios. TRU is also offering their proprietary Current 365® training, which provides access to the online training suite throughout the year, as opposed to a typical one-time recurrent training event. Current 365 is a sophisticated and engaging way of keeping customers refreshed on aircraft systems and procedures. Customers that prefer to complete their ground school training on-site in a classroom will still have the option to do so.

TRU's comprehensive ProFlight pilot training offering for the new production Beechcraft turboprop includes an initial type-rating course, an introduction course on the Rockwell Collins Pro Line Fusion avionics package, a recurrent training program, as well as a FAR part 135 training program. ProFlight instruction combines use of the King Air 350i full motion flight simulator and proprietary Level 6 flight training device for enhanced avionics training capability in a modern classroom setting that incorporates interactive animated courseware for all aircraft systems.

More information is available at *www.TRUSimulation.com*. KA

King Air Technically...

RECENT SERVICE BULLETINS, ADVISORY DIRECTIVES AND SAFETY COMMUNICATIONS

From King Air Communiqué 2016-09:

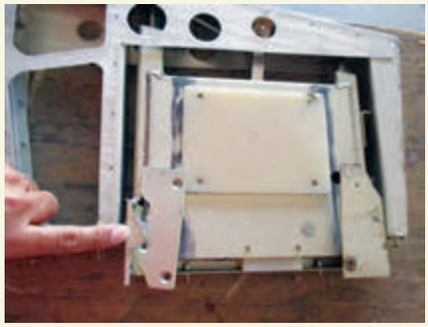
Issued: August 2016

ATA 25 – Passenger Seat Arm Rest Repairs/ Toilet Seat Frame Repairs

B200, 300, B300

The passenger seat arm rests for Beechcraft King Air Models B200, 300, and B300 may be susceptible to breaking when they are used for purposes other than what they were designed. Arm rests were not intended to be used as a seat. Example results are shown in the photo at right.

Toilet seat frame, part number 101-531219-3 and 130-530146-3, used on Beechcraft King Air Models B200, 300, and B300 are prone to cracking at the pivot point where the toilet seat prop rod supports the seat while in the up position. When the prop arm is not released and the seat bottom is forced down, the result can be a cracked frame.



Example of an arm rest crack.

Textron Aviation now offers repairs for these components. Owners/operators can use the Customer Repair Request Form (included with the original Communiqué online). Make repair requests directly to *citationrepair@txtav.com*.

ATA 28 – Heated Fuel Vent Installation

All

Technical Support continues to receive questions from owners/operators asking about the proper orientation for the heated fuel vent. The heated fuel vent has a scarf cut at an angle at the tip that is pointed forward (see photo below).

The purpose of this heated fuel vent is to provide a positive pressure to the fuel tanks via this vent tube. If the heated vent is installed facing aft, this condition can create a vacuum in the fuel vent system. This vacuum can collapse the fuel bladders and possibly prevent normal fuel flow.

Correct placement of heated fuel vent.

The above information is abbreviated for space purposes. For the entire communication, go to www.txtavsupport.com.

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ADVERTISING INDEX

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J. Scott Lizenby, Chief Financial Officer

Reliance

Knowing that you can rely on your aircraft gives you that assurance and peace of mind when it comes time to throttle up. Yingling Aviation and our team of experts will meet your expectations day after day. Allow our team of professionals to be your ground crew and count on us for all of your scheduled and unscheduled maintenance needs. Whether you have one aircraft or an entire fleet, we are here for you.

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- **Avionics** - All the products and capability to provide the best options available for upgrades and repairs.
- **Interiors** - A well-deserved reputation for quality interior craftsmanship.
- **Line Service** - Whether a base customer or transient guest, your aircraft and passengers are met with the best professional service in Wichita.
- **Parts** - The industry-leading parts and Propeller sales for Beechcraft and Cessna.
- **Pre-buy and Maintenence** - With our many departments under one roof we provide uniquely comprehensive full-service support of your aircraft's airframe, engine(s) and prop(s).
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Paul P.
Chief Pilot

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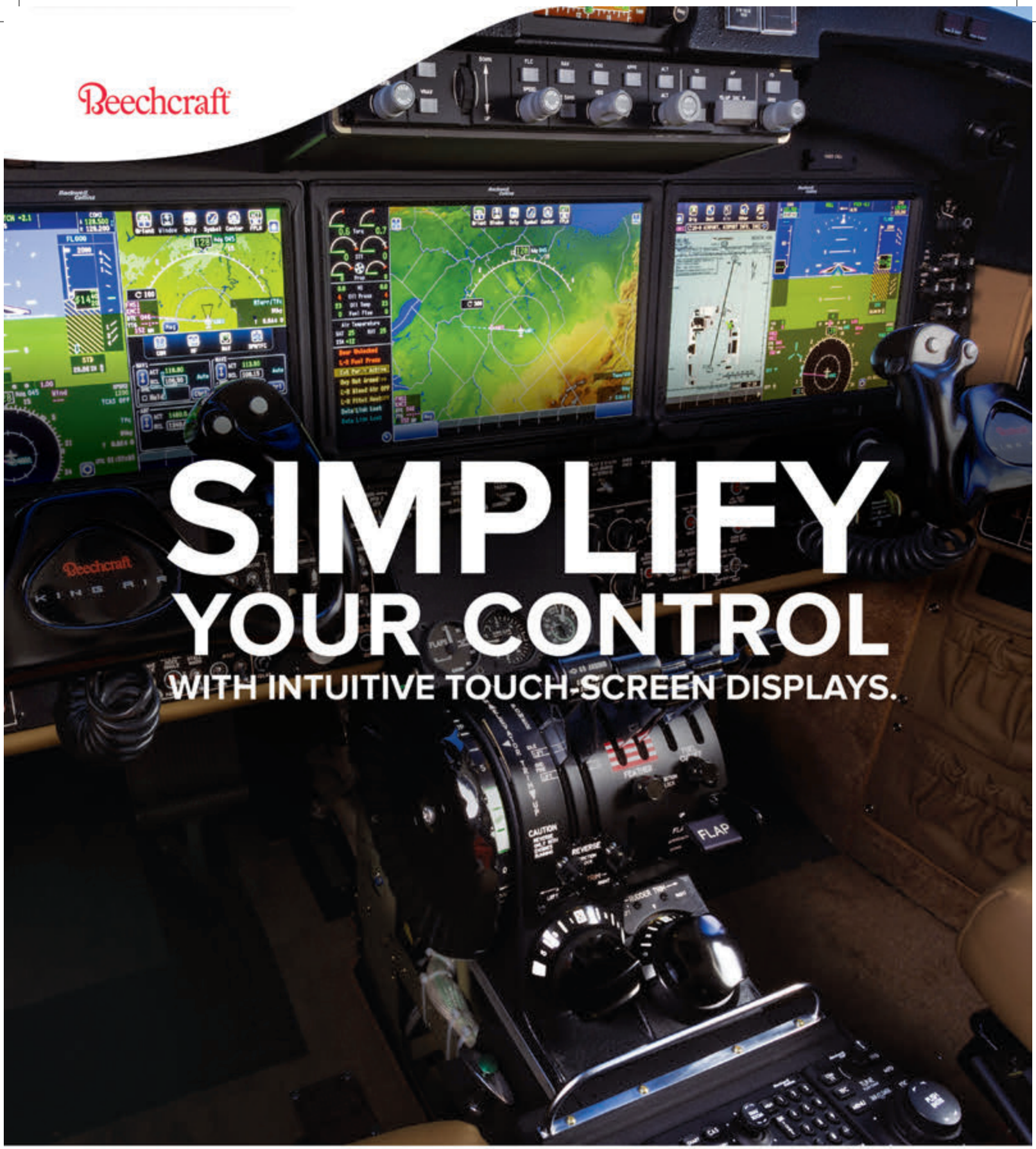

Textron Aviation's world-class service centers seamlessly integrate Rockwell Collins Pro Line Fusion™, giving you improved aircraft management, in-flight awareness and flight automation in one simple install.

Learn more at **service.txtav.com**.

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