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COVER PHOTO

Stock Photo

2

Cover Story – Helping Friends and Neighbors by MeLinda Schnyder

12

Maintenance Tip – Legacy King Airs and the IPC by Dean Benedict



Aviation Issues – Valuable News from the FAA by Kim Blonigen 20 Ask the Expert – Yaw Dampers ... What They're Not by Tom Clements



26 In History – The Flying Santa

30 Value Added

32 Advertising Index

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COVER STORY

Helping Friends

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When there are enough patients needing medical transportation in the same destination, a King Air comes in handy. Wayne Petrus, third from right, flew this group of patients and companions from Louisiana to Houston, Texas, in a Beechcraft King Air C90A Blackhawk model. The airplane is one of five for which Petrus is a professional contract pilot.

Pilots for Patients allowed this patient, shown sitting in the back between her daughter and pilot Wayne Petrus, to spend time with her three children in Monroe, Louisiana, while taking weekly treatments for terminal breast cancer in Houston, Texas.

and Neighbors

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Pilots for Patients has access to just a handful of Beechcraft King Airs, which it uses only when an efficient mission will result. Wayne Petrus flew this King Air BE200 for a group that included this open heart surgery patient and his companion on a flight from Birmingham, Alabama, back to Rayville, Louisiana.

PILOTS FOR

King Air pilot among founders of Pilots for Patients

by MeLinda Schnyder

hen pilots Wayne Petrus and Philip Thomas flew missions for Angel Flight South Central in the early 2000s, they noticed the tremendous need for flights originating from their home state of Louisiana.

Angel Flight was doing an admiral job, but with the organization based in the Dallas metro area, many of their pilots were also Texas based. It could be difficult to recruit pilots from Dallas to fly to Louisiana to pick up a patient who then needed to go to Houston for treatment.

The pair, based in the city of Monroe in northeast Louisiana, decided to start an organization that could focus on Louisiana and other areas of the Deep South, including parts of Mississippi, Arkansas and East Texas. Pilots for Patients (PFP) formed in December 2007 and Petrus – now a contract pilot with 6,500 hours



Since helping launch Pilots for Patients 16 years ago, Wayne Petrus has accumulated 330 PFP missions totaling 118,017 nautical miles and 704 hours including this flight in a Pilatus PC-12 to transport the family of Cody, who had a work-related spinal injury in 2023, from rehab in Chicago back to Monroe, Louisiana. including nearly 1,000 hours in King Airs – made the first patient flight on Jan. 14, 2008.

Through mid-November 2023, Pilots for Patients has completed 7,350 total missions in the air and on the ground with 2,706,081 nautical miles flown. The organization – the only active 501(c)(3) volunteer pilot organization based in Louisiana – has also given back over \$6 million in in-kind services.

PFP averages 15-30 missions each week and needs additional aircraft and pilots, including Beechcraft King Air aircraft.

How it works

PFP's mission is to assist those in need of air transportation for medical purposes. The goal is to eliminate the burden of travel and to let the patient concentrate on getting better. This service is free of charge for qualified patients and requesting agencies. Patients who travel with PFP must be medically stable and ambulatory. They must be able to climb into a small aircraft and sit upright for the duration of the flight. They must not have any medical condition that prevents them "PFP averages 15-30 missions each week and needs additional aircraft and pilots, including Beechcraft King Air aircraft."

from flying in a non-pressurized aircraft as no medical care is provided in flight.

Pilots for Patients normally fly up to 350 miles one way. Petrus said the majority of PFP's flights are for people heading to MD Anderson Cancer Center in Houston, Texas, which is a six-hour drive by car from Monroe, a 1.5-hour flight in a Beechcraft Bonanza and one hour in a Beechcraft King Air. Patients needing medical treatment





Pilots for Patients often fly the same passengers multiple times. Mindy has endured years of battling cancer with tumors in her bones, brain and lungs. This photo shows her on the left with her mom and pilot Wayne Petrus celebrating a "no cancer present" report when flying back to Monroe, Louisiana, in November 2023 from MD Anderson Cancer Center in Houston, Texas.

at facilities farther than the 350 miles are set up with a relay flight beginning with PFP and handing off to one of their companion volunteer organizations, such as Angel Flight, that will take the patient to their destination.

Founders Petrus along with Thomas and his wife, Sharon, continue to fly for Pilots for Patients and they serve on the board of directors. Board members of PFP are not compensated, and pilots who fly patients for PFP are also not reimbursed for their time, aircraft or fuel. The organization does not receive funding from state or federal government agencies. All monies donated to PFP are used to pay for two employees, hangar rent at Monroe Regional Airport (KMLU), utilities, office upkeep, recruiting and patient outreach activities along with numerous other expenses to operate successfully.

Pilots who have completed the paperwork to become a volunteer pilot can see what missions are being requested and sign up for ones they are available to fly. There's no requirement to fly a certain number of flights. Petrus said PFP has about 200 pilots in its database and around 60 who fly regularly. "Some fly two trips a year and some fly over 50 trips a year, and we need all of them," he said.

Pilots are based throughout the state to cover Louisiana's main cities and to provide service to surrounding states as well.

First time patients watch a video on what to expect on the flight then receive a handmade quilt and goodie bag. "We try to make it a very pleasant experience," Petrus said. "The patients are so gracious because they know that it takes a lot of resources to make this happen during their time of need. The services we provide aren't based on the finances of the patient. If a patient has cancer and needs to go to MD Anderson, sometimes a private airplane is their only choice. They can't take the airline because of the fear of catching something while their immune system is depressed and, for some, they are not healthy enough to make the six-hour drive."

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Pilots Wayne Petrus and Philip Thomas saw so much need in their home state of Louisiana that they founded Pilots for Patients in 2007 to focus on helping friends and neighbors. Earlier this year Petrus flew Nora Kay in a King Air C90A from Rayville, Louisiana, to the Mayo Clinic in Rochester, Minnesota, to be treated for a rare and aggressive leukemia. She is currently awaiting a bone marrow transplant at St. Jude Children's Research Hospital in Memphis, Tennessee.

A King Air pilot's perspective

Petrus, 64 years old, has been a pilot for 45 years and has owned Bonanzas and Barons over the years as well as building his own aircraft. He is retired from a career of owning hardware and hunting stores. He currently owns a Cirrus SR22 G5 and is a professional contract pilot for three different King Air owners – two BE200 models and one C90A Blackhawk model – a Kodiak 100 and a Pilatus PC-12.

"Those owners are generous enough that if we have a really big need for a group to go or come back, they will allow me to use their airplanes," he said. "It's not that often; I may fly four King Air trips a year for Pilots for Patients."

Petrus flies approximately 250 hours a year professionally and another 100 hours flying personal and volunteering. Since helping launch Pilots for Patients 16 years ago, he has accumulated 330 PFP missions totaling 118,017 nautical miles and 704 hours ... and counting.

The November afternoon we talked to him, Petrus had just finished flying three passengers from Monroe

to Houston's Ellington Airport (KEFD) and bringing one passenger back to Monroe. The patients included a 73-year-old man making his 43rd trip with PFP to treat prostate cancer, a man with lymphoma and a woman who was traveling home with a clean bill of health for the first time in three years of regular cancer treatments.

"You have patients who have good outcomes, and some who don't," Petrus said. "As a pilot, the people we fly regularly become like a part of your family. You share their journey with them. It's a blessing for the pilot as much as it is for the patient."

The majority of PFP flights are accomplished in fourto six-seaters. Petrus most often uses his Cirrus to fly for PFP but appreciates having larger aircraft available as needed. For example, they've had as many as five patients and their companions needing transportation on the same day – rather than four aircraft and four pilots, the mission could be accomplished in one flight.

He encourages King Air owners and operators in the Deep South to visit *pilotsforpatients.org* to get signed up.

"They won't fly regularly because we don't want to waste that resource," he said. "We make sure that if we're



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going to use a King Air that we fill it up on both legs. It doesn't make sense to put one or two patients in an eight- or nine-seat King Air when we can do the same trip in a Bonanza or a Cirrus much more economically."

Pilots for Patients also relies on patrons and accepts monetary donations through the website. Petrus feels fortunate to be able to continue to help his friends and neighbors in their time of need, whether it's flying them for treatment such as heart surgery, chemotherapy, dialysis or bone marrow transplant or reuniting them with family after a long stay at a medical facility.

"I'm blessed in the fact that I have airplanes, I know how to fly them and I'm financially able to help people," he said. "That's really what life should be all about – trying to help if you're able."

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An upgrade or modification for your King Air, such as new props, requires an STC. The obligatory maintenance for that modification is found in the Instructions for Continued Airworthiness (ICA).

Legacy King Airs and the IPC

by Dean Benedict

director of maintenance from Alaska with several King Air B100s called me not long ago. The most recent addition to his fleet had a pressurization problem that would not resolve. The system tested fine on the ground, but there was no pressurization in the air. He had researched the part number of the flow pack in the IPC (Illustrated Parts Catalog), ordered exchange units and installed them. The pressurization checked good on the ground but was "inop" in the air.

I asked him if he exchanged the pneumostats as well, and he had not. That was my first suggestion. My cardinal rule No. 1 with pneumatic flow packs is: Whenever exchanging a flow pack, exchange the pneumostat at the same time.

Assuming that the first set of flow packs were out-ofbox failures, he sent them back and ordered an exchange flow pack *and* pneumostat for each side. He received the parts, installed them in the aircraft, but again, there was no change. Pressurization checked good on the ground but was non-existent in the air.

He called once more, and I admit I was a little bit stymied. I had to dig deeper. I had him make sure all the various components in the pressurization system were working, such as the outflow valve, the safety valve, the dump solenoid and the pre-select solenoid.

Of course he wondered if there was a problem with the controller. It amazes me how many people immediately suspect the controller before everything else. Whenever there is a pressurization glitch, everyone's knee-jerk reaction is to assume the controller is at fault. When troubleshooting pressurization, the controller is the last place I look – and I do mean last – that's cardinal rule No. 2 in troubleshooting pneumatic flow packs. These controllers don't fail. Yes, they can have inaccuracies, especially with selected altitude (being off by 500-1,000 is not unusual) but total failure is extremely rare.

He tested and re-tested the various valves and solenoids to no avail. Everything checked out well. Out of the blue, I asked him for the serial number of this aircraft, and guess what? I knew this B100 quite well! Back when I had my shop, I performed regular maintenance on the King Air for several years.

I asked him if he was ordering flow packs for a -6 engine or a -10 engine. (Note: The Garrett engines originally installed on B100s by the factory were TPE 331-252B-6. Later, an upgrade became available which modified these engines. Installation of the mod turned

the engine into a TPE 331-252B-10). I knew this B100 had -10 engines.

I also knew that the flow pack for a -6 engine was not the same as the flow pack on a -10 engine. The IPC he used to research the flow pack only lists the components installed when the aircraft was new. The parts and components that go along with the -10 engines are found in the -10 STC, which would be in the aircraft flight manual.

Once the correct flow packs for the -10 engines were procured and installed, everything worked as advertised. I just wish I had asked more about the aircraft history before diving into discussions of squawk and remedy.

Maintenance Manual Versus STC Requirements

This week, while writing this very article, I got a call from a King Air owner in distress. His model 200 was in a shop for phases and hot sections, and the shop's estimate raised many questions. He had lost confidence in the shop and wanted my advice. He sent me the estimate, a few photos and the work order. Right away I saw several red flags to pursue.



One of them was an \$8,000 charge for brake hoses in conjunction with the 5-year brake hose replacement called out in the maintenance manual (MM). First of all, that amount of money for brake hoses is ridiculous, and it's what caught the customer's attention. But way more important was the fact that this King Air had Cleveland brakes! I could see them plainly in the photos. *The 5-year brake hose replace does not apply to the Clevelandsupplied brake hoses*. It is one of the most common STCs performed on King Airs. The maintenance requirements for Cleveland brakes are in the STC paperwork.

It's important to note that a King Air with the Cleveland conversion still has two original brake hoses located on the upper and lower struts of the main gear. These hoses are what came with the aircraft; they are subject to MM requirements and they are to be replaced every five years. They cost about a couple of hundred bucks per side.

Remember, all approved aircraft modifications and upgrades come with an STC (Supplemental Type Certificate) which extends the airworthiness of the aircraft's original type certificate to the modification. The STC is the source for maintenance requirements on that mod; the maintenance manual no longer applies in that area. STC paperwork is normally kept in the Aircraft Flight Manual for easy reference when the aircraft is in for maintenance. When I called the shop on behalf of the owner, I spoke to two different guys. I asked each why they proposed to perform a 5-year hose change on Cleveland brakes. Both gave me the same blunt answer: "The maintenance manual requires the brake hoses to be changed every five years." It was delivered in a definitive tone, as if to say "You can't argue with the maintenance manual so there is no use discussing it any further." They had side-stepped the whole issue of Cleveland brakes and the STC guidelines.

This was especially odd because, on closer inspection, we found that \$8,000 charge was the price of replacing the Cleveland brake hoses! (Note: Cleveland hoses are sheathed with stainless steel webbing; it makes them very durable, so they don't need replacement every five years; it also makes them far more expensive than regular brake hoses.)

So where do you think the shop found the part numbers for the Cleveland hoses quoted on their estimate? In the IPC? Of course not. The IPC, like the MM, does not apply to STC'd parts. *They had to look in the STC*.

Questionable shop ethics aside, this owner is now acutely aware of the difference between STC'd equipment versus items original to his aircraft, and he now knows where he, or any shop working on his King Air, must look to ascertain the maintenance requirements – lesson learned.

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STC Instructions for 4- and 5-Blade Props

Years ago I had a customer who owned a helicopter charter company. He also owned a King Air C90, and all the maintenance for it was done by his helicopter mechanics (all A&Ps of course.) When he put brand-new 4-blade props on his King Air the mechanics performed the installation and rigged the props according to the maintenance manual.

Unfortunately, his well-meaning mechanics rigged the 4-blade props to the MM specifications for the 3-blade props that had just been removed and were original to the aircraft. They failed to research the STC for the new props.

The mis-rigging was discovered within a year of the installation, but it was way too late. The 4-bade props had to be scrapped. It was a \$120,000 mistake. If your King Air has 4- or 5-blade props (whether original to the aircraft or an added upgrade) you should be acutely aware of your low-idle setting and the vital necessity of keeping it at or slightly above the specified setting. If it is too low, a condition known as "reactionless vibration resonance" sets in. If not remedied immediately, the consequences can be catastrophic. In this example, the low idle was set at 900 rpm, as called out in the MM for the original 3-blade props. However, it should have been

set at 1,100 rpm *in accordance with the STC* for the 4-blade prop upgrade – a very expensive lesson learned.

STCs and ICAs

The sustained success and popularity of the Beechcraft King Air has resulted in a vast number of aircraft that are 30 or 40 years old and still going strong. The majority of these King Airs have been modified and upgraded in some way. The applicable STCs are an essential part of an aircraft's records.

Think of everything you can change or add to a King Air! From engines, propellers and brake conversions to airframe modifications (such as strakes, winglets, wing lockers, etc.) to interior modifications or reconfigurations, avionic upgrades and even conversions to LED lighting. The list goes on and on.

All such modifications were awarded an STC when approval was granted by the Federal Aviation Administration (FAA). When a mod is installed, it comes with STC paperwork, normally kept in the aircraft flight manual. The Instructions for Continued Airworthiness (ICA) is part of the STC. When anyone refers you to the STC for the maintenance requirements of a mod or upgrade, they specifically mean the ICA. All the vital information pertinent to the installation of the mod and the required maintenance tasks going forward are found there. The ICA supersedes the maintenance manual in regard to that mod or upgrade.

Remember, the MM and the IPC only address components *original to the aircraft*. The ICAs for all subsequent modifications installed on your King Air go hand in hand with the MM and IPC. Taken together, you have everything needed to ensure the continued airworthiness of your King Air.

Dean Benedict is a certified A&P, AI with nearly 50 years of maintaining King Airs. He owned and ran Honest Air Inc., a maintenance shop that specialized in Beechcrafts with an emphasis on King Airs. Currently, with BeechMedic LLC, Dean consults with King Air owners, operators and maintenance shops on all things pertaining to King Air maintenance. This includes troubleshooting, pre-buys and maintenance management. He can be reached at dr.dean@ beechmedic.com or 702-524-4378.

Valuable News from the FAA

NAS Safety Review Team Report Provides Recommendations on ATO Safety

Earlier this year, the Federal Aviation Administration (FAA) commissioned the National Airspace System's Safety Review Team (SRT) to review the Air Traffic Organization (ATO) in respect to the increased number of aviation safety risks at airports.

In mid-November, the SRT presented their findings in a nearly 50-page report. In their introductory letter to FAA Administrator Michael G. Whitaker, the SRT explained key points of what was reviewed, how the information was gathered, the challenges discovered and their recommendations.

It further explained they were making "recommendations to address the areas of process integrity; staffing; and facilities, equipment and technology. Recommendations are also made regarding inadequate, inconsistent funding because of its criticality to affecting meaningful change in the other areas."

In response to the report Administrator Whitaker said, "The independent safety review team made some excellent recommendations and we are adopting some of them immediately."

The FAA is taking immediate action on the following items:

- Provide additional support to colleges and universities in the Air Traffic-Collegiate Training Initiative (AT-CTI) Program. The FAA will work with AT-CTI programs to ensure that graduates from these programs have the necessary skills to begin on-the-job training at a facility. These graduates still must pass the Air Traffic Skills Assessment (ATSA) exam and meet medical and security requirements. Previously, these graduates were required to attend the FAA Air Traffic Controller Academy prior to being assigned to a facility.
- Announced a year-round hiring track for experienced controllers from the military and private industry.
- Keep filling every seat at the FAA Academy and increase our classroom capacity beyond current limits.
- Expand the use of advanced training across the country. The agency has new facilities in Chicago and San Diego, and will be adding them in Nashua and Phoenix in the spring.
- Finish deploying tower simulator systems in 95 facilities by December 2025. The FAA will deploy the first system in Austin by January 2024.

 To strengthen our safety culture, provide reports from the Air Traffic Safety Oversight Service to the FAA Administrator and Aviation Safety Associate Administrator.

The SRT's report can be read in its entirety at: www. faa.gov/NAS_safety_review_team_report.pdf

New FAA Guidance regarding 5G C-Band Interference

The FAA recently released a Safety Alert for Operators (SAFO) with updated information regarding potential adverse effects on radio altimeters from 5G C-Band interference, recommending operators equip affected aircraft with 5G C-Band tolerant radio altimeters as soon as possible.

The National Business Aviation Association (NBAA) reported that the guidance, published in SAFO 21007 – Risk of Potential Adverse Effects on Radio Altimeters when Operating in the Presence of 5G C-Band Interference – is the latest official update since the July 1 deadline for airlines to equip their aircraft with filters to reduce the risk of adverse effects from 5G C-Band interference.

In the SAFO, the FAA explains the risk of interference is highest for aircraft that have not been retrofit and interference could cause systems to operate in an unexpected way during any phase of flight but most critically during takeoff, approach and landing phases. A list of potentially impacted systems is included in the SAFO; however, operators and pilots should note this list is not exhaustive.

Nineteen more wireless companies are starting to deploy 5G C-Band emitters throughout the contiguous U.S., the agency reported, making the process of NOTAM and Alternative Method of Compliance runway lists "untenable."

"NBAA encourages aircraft owners and operators to consult with their OEMs regarding the need and availability of upgrades or filters. Pilots and operators should continue to watch for relevant NOTAMs related to 5G interference risks," said Heidi Williams, NBAA senior director of air traffic services and infrastructure.

Pilots and operators should also become familiar with content of the SAFO (Read FAA's SAFO 21007) and pilots should continue to report any radio altimeter anomaly to the FAA.

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ASK THE EXPERT

by Tom Clements

frustrated King Air instructor-pilot and friend asked:

Why do so many pilots think that rudder pedal and rudder trim usage are unnecessary after they turn on the yaw damper? I have observed pilots, even experienced ones that fly an entire King Air flight without ever making a rudder trim adjustment. That's crazy! Don't they feel that the airplane is not flying coordinated? Don't they ever look at the ball? I think rudder usage is a rapidly dying art, dang it! Would you please write an article that explains why a yaw damper does not eliminate rudder usage?

This is a great request, one, because I am always open to suggestions for worthwhile King Air article topics and two, because I observe the same problem myself. I have concluded that many pilots expect the yaw damp system to do more than it can. Before continuing, let me remind you that Webster's dictionary includes at least three definitions of damp: (1) a noun, meaning "a slight wetness"; (2) an adjective, meaning "somewhat moist or wet"; (3) a transitive verb, meaning "to check or reduce." It's that last one that applies to the device that checks or reduces rotation around the airplane's vertical axis. Further, Webster does not even include the word dampner. Instead, dampener is a noun for something that makes things moist whereas damper can be "anything that deadens or depresses." Many King Airs are equipped with yaw dampers, but I have yet to see a King Air option for a yaw dampner, something that ... what? ... sprays water on the tail?

While we are reviewing definitions, *yaw* means "to turn from the desired heading" and, specifically as applied to aviation, "rotation around the vertical axis." Notice the word "*rotation*"? Yaw occurs when rotation is taking place, not before or after. In other words, press a rudder pedal while using the ailerons to keep the wings level. Of course, the nose moves, yaws, in the direction of the pedal you push. But if you were to keep pedal pressure applied and maintain wings level, there is no longer yaw. A slip? Sure. Uncoordinated flight? Of course. But the yaw stopped once the nose, or longitudinal axis, stabilized at whatever position it reached relative to the plane's direction of travel. Vice versa, release that pedal pressure while keeping the wings level and the airplane should yaw back toward trimmed, coordinated, flight in which the longitudinal axis is pointed exactly in the direction of travel.

It is obvious that yaw action is uncomfortable and hence is something we pilots need to do our best to reduce or eliminate so as to avoid inflicting this discomfort on our passengers. The old-time pilot who could provide a reasonably yaw-free flight through turbulence in a late-'40s or early-'50s Bonanza (I almost wrote "V-tail Bonanza" but back then there weren't any other kinds) was rare to find and was putting his feet and legs through a good workout!

Thank goodness for the advent of electronic yaw dampers! With these, the autopilot's rudder control – the autopilot's third axis of operation, the one that takes a back seat to aileron (roll) and elevator (pitch) control – could be used for reducing yaw. Not all yaw damp systems are designed the same, but usually all have an accelerometer of some type that measures lateral acceleration in the tail. Some also receive input from a heading gyro. The autopilot computer, based on these inputs, then commands the rudder to move to resist the acceleration. Simply, and obviously, when the nose yaws to the right, the left rudder is applied and when the nose goes left, the right rudder input is made.

Yaw dampers that are strongly accurate provide improved ride comfort.

" ... more right rudder input is needed during higher-power, slower speed, takeoff and climb operation than is required during high-speed cruise and descent operation ... "

The yaw damper does not try to center the ball, to ereate coordinated flight. It just reduces yaw. Someday, when you're on a deadhead leg at altitude, with the autopilot engaged, crank the rudder trim two, three or four units to one side and watch what happens. Since the yaw damper is resisting nose movement, it may take nearly a minute or more to observe the final outcome. Eventually you'll see that the airplane is in a grossly uncoordinated condition, yet the yaw damper is still working just fine.

In my experience, some yaw dampers operate much better than others and when we fly an airplane with a really strong and accurate yaw damper, it certainly makes for tremendously improved ride comfort. Now it feels like the rudder pedals are immersed in heavy mud, nearly concrete. Yes, they can be moved with foot force, but it takes quite a push!

I think that the feeling of the pedals being nearly unresponsive plays the major role in why too many pilots forfeit rudder control totally to the yaw damp system. Guess what? I agree, and rarely do I push the pedals hard enough to overcome the yaw damp system's pedal force! But I sure use a lot of rudder trim! Let me explain further.

Entire chapters in aeronautical texts have been devoted to the myriad of forces acting on an airplane in flight and most of my *King Air* readers have been exposed to these writings. I will not reconstruct the reasons that these texts provide, but I will emphasize the fact that more right rudder input is needed during higher-power, slowerspeed, takeoff and climb operation than is required during high-speed cruise and descent operation (at least for aircraft, like all King Airs that have clockwise-rotating propellers). If appropriate rudder changes are not made, then the result is some level of uncoordinated flight. By "uncoordinated flight" I mean that the bank angle is not proper for the rate of turn being achieved, leading to the ball (the slip/skid indicator white rectangle, or bar, for you EFIS-watchers) not being centered.

(A side note: I flew my first few years with an *uneducated butt*...buttocks. Yes, I included the ball in my scan and felt that I did a decent job of flying in a comfortable and coordinated manner. It was not until taking some

further lessons from an aerobatic instructor that I was taught that my posterior, sitting in the pilot's seat, could be a rather good ball substitute. If my body's weight was evenly distributed so that both butt cheeks carried an equal amount, I knew the ball would be centered. Anytime I felt one side heavier than the other, I was flying uncoordinated and needed to apply more rudder force on the heavier side. Has anyone mentioned this to vou? Go up with a pilot friend or instructor and try it yourself. Close your eyes while the other pilot uses the rudder pedals or rudder trim to create some rather gross ball-out-of-center conditions. Now, with your eyes still closed, take the controls and apply rudder force on the side of your heavier cheek until you feel proper left-right weight balance. If you have rudder trim, use it, too. Now open your eyes. Pretty cool, eh? Whether your safety pilot left you in level flight or in a 45-degree bank, you'll always be able to return to reasonably coordinated flight just by using your now-educated butt.

So let's say that we've just passed through 400 feet HAA (Height Above Airport) following our takeoff in a C90GTx and have engaged the autopilot, which of course brought on the yaw damper, too. After the system follows the FMS command into a turn toward the first departure procedure waypoint and levels out on a steady heading, we notice that the right winglet is a little lower on the horizon than the left one and the slip/skid bar is deflected a little to the right. (The weight is just a tiny bit heavier on our right butt cheek as well.) We could, with some forceful, steady, effort on the right rudder pedal correct this situation, but instead we reach down to the rudder trim wheel and rotate it clockwise - toward the "ball," toward the low wing - just a tad, maybe one-eighth of one trim unit. Now we continue with our flying duties of traffic scanning, engine gauge monitoring, executing the After Takeoff checklist, etc. A couple of minutes later we note that the ball is still a tiny bit to the right, so we add another eighth of a unit on the rudder trim wheel. Now we see that the wings are level, the slip/skid bar is right under the sky pointer at the top of the PFD, and all is well in our flying world.

As we level out at FL230 – ATC gave us an unrestricted climb today – we keep climb power while we accelerate into cruise flight. This gives us time to do some more cockpit monitoring and perhaps even consult the Cruise Power chart. It slowly dawns on us that now the left wing is lower than the right and that darn slip/skid bar is now quite a bit left of center. Our hand goes to the rudder trim wheel, again turning it toward the skid bar, toward the lower wing, but not too much ... no more than an eighth or quarter of a trim unit. Let at least 30 seconds or so elapse before making another minor adjustment. Keep doing this until coordination is perfect.

The same minor rudder trimming will be needed during the descent, approach maneuvering and throughout the final descent to landing. Since it's not as obvious that a very small amount of uncoordination is taking place

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when lots of banking and turning is going on for the approach and landing, you likely won't have to worry as much about this now as you did during steady-state climb, cruise and descent. In fact, leaving the trim wheel alone – although not a perfect technique – will probably yield a ride that is close enough to perfection that the difference is immaterial.

"Gee whiz, Tom! Are you telling me that I need to make rudder trim adjustments virtually all the time whenever I make a configuration or speed or power change?! You've got to be kidding! If I had to do that I'd trade my airplane in for one that is better-rigged!"

Sorry, but yes, that's exactly what I am telling you. You won't find a better-rigged airplane in your search, since there's nothing wrong with the one you're already flying. It is merely observing the laws of aerodynamics.

There are lots and lots of pilots – not just King Air pilots, but that's the group we are targeting here – who fly entire flights and never move the rudder trim wheel unless they are facing an engine-out situation.

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Are they bad pilots because of this? There are so many other factors that go into measuring whether a pilot is "good" or "bad" that I won't offer a direct answer. However, this I know: Those who never adjust rudder trim have not yet developed a superior sense of coordinated flight and, at least in this small area, their flying skill can use improvement. It is my belief that they likely have set the trim to be about right for cruise conditions and overlook the slightly out-of-trim conditions they have during other flight regimes.

A very few King Air B200s and 300s were delivered with the King KFC-400 autopilot/flight director system. In this unique and rare system, there was one additional servo, one used for rudder trim. It is surprising to watch the trim wheel rotate without a human hand anywhere nearby! When this system is installed and engaged, the rudder trim always tries to create coordinated, ball-centered flight. If you move the wheel manually while the yaw damper is engaged, the system will soon rotate the wheel back to where it wants it, not where you left it. As you might expect, this can be quite a nice feature when it is adjusted perfectly and it really does create flight conditions with exact coordination. On the other hand, if it is misadjusted, it's a nightmare. Get a knowledgeable avionics technician to work, pronto, if you can never seem to enjoy perfectly coordinated flight with this system. And don't confuse the KFC-400 with its predecessor, the KFC-300 that has no rudder trim servo.

Let me close with three additional comments. First, I firmly believe that there are hundreds, if not thousands, of pilots who, when they observe their autopilot-equipped and engaged airplane flying leftwing-down in cruise, and who have unsuccessfully tried to correct the problem by use of aileron trim, having given up and concluded, "That's just the way it is." Little do they know that a shot of rudder trim toward the low wing will bring it up. Realize that the yaw axis of the autopilot does not provide turning or steering of the airplane. It just reduces yaw, period. What turns the airplane is the horizontal component of lift, and we create that by banking the wings.

Play a "Let's Pretend" game with me. Let's pretend that you're in the fixed-wing plane you used for your initial pilot training and the instructor tells you to put your feet on the floor and use only the ailerons to keep the nose pointed at some spot on the horizon. "Easy game!" you're thinking. Now let's pretend that the instructor slowly applies some left rudder. What you observe is the nose starting to move a little left of your aiming point, so you use the ailerons to bank right until the nose is back where it belongs. So now you are holding the correct, steady heading, but you're in a slight right bank ... which was caused by too much left rudder! As soon as the instructor lets up on that rudder

pedal – bingo! – you'll need to level the wings to keep the nose from slewing right of the aiming target.

The autopilot uses the ailerons to steer, just like you did in this pretend game. It can hold a constant heading with wings level only when the rudder is correctly positioned.

The second closing comment I wish to make – and it's somewhat obvious based on what I've written thus far in this article – is how "naked" I feel when an airplane does not have rudder trim. I love Bonanzas, but the fact that Walter Beech didn't make rudder trim standard or even available on many of them is a gross oversight, in my opinion. I get tired of (A) having to always climb with a lot of right rudder pedal force, or (B) flying with the ball out of center and a wing slightly down. Yuck!

Third and last, some airplanes more than others have significant stickiness or friction ("stiction?") in their controls, including the rudder axis. If you make a few small rudder trim wheel adjustments but you see no results – the ball is not centering, the low wing is not rising – push the low side's rudder pedal smoothly and firmly with your foot to overcome the stiction that is preventing the rudder from moving. There, that did it!

And you thought flying a King Air was easy?! Well, it is! Flying with perfect coordination, however, is one factor distinguishing true aviators from mere pilots.

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

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

IN HISTORY

The Flying Santa

ave you heard of The Flying Santa flights that have continued uninterrupted for 94 years? They started on Christmas Day 1929 in a floatplane built by Travel Air, the airplane manufacturer started in 1925 by Walter Beech, Clyde Cessna and Lloyd Stearman.

Early aviation pioneer William Wincapaw loved flying, especially amphibious airplanes that were practical for navigating the numerous islands in Penobscot Bay, an inlet of the Gulf of Maine and Atlantic Ocean in south central Maine. In 1929, Capt. Wincapaw was managing the Curtiss Flying Service at Rockland airfield and a nearby seaplane base while flying mail, medicine and supplies to remote coastal communities in a Travel Air A-6000-A outfitted with floats. Known for an adventurous spirit and his willingness to fly in less-than-ideal conditions, he was often asked to provide transportation for sick or injured islanders. He appreciated the lighthouse keepers whose tireless efforts helped keep him safe along the way by providing navigation along the coast. When he had time, he returned to the lighthouses to visit with the keepers and their families, whose lives were often thankless and lonely while living on an isolated island. He wanted to do even more to show his appreciation, and on Dec. 25, 1929, he loaded his plane with a dozen packages containing newspapers, magazines, coffee, candy and other items.

He took off and one-by-one, he dropped the packages to the lighthouse keepers.

The flight was an instant success and continued to expand each year to more lighthouse families and Coast Guard stations in Maine, plus Massachusetts, Rhode Island and Connecticut. The communities started to call Capt. Wincapaw The Flying Santa and Santa of the Lighthouses, and he began to dress for the role, with a suit and beard. Eventually, he was joined by his son Bill, Jr., an aspiring pilot who first flew routes with his father and then took on his own routes.

Each year the program expanded to new locations and more help in the way of pilots, organizers and sponsors to help offset the costs of the growing program were needed. By 1933, the Christmas flights visited 91 lighthouses and Coast Guard stations from the Wincapaw's new home base in Winthrop, Massachusetts. In 1938, Bill, Jr., was in charge because his father couldn't make it home from flying gold and mining machinery in South

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The Travel Air A-6000-A was the aircraft flown on the first Flying Santa flight that started the 94-year tradition.

Through fundraising and public outreach, Friends of Flying Santa strives to continue the annual Christmas flights — now with helicopters — and carry on this gesture of gratitude to the men, women and families who watch over our coastal waters. The mission remains dedicated to Captain William Wincapaw and Edward Rowe Snow's philosophy that lighthouse keepers and United States Coast Guard crews were true lifesavers and deserved to be recognized for their efforts. As long as there are boat station crews, aids to navigation teams and other units serving to keep the waters safe, Friends of Flying Santa will do its part to remind them of how much their work is appreciated.

If you are a fan of lighthouses, maritime and aviation history, or just wish to show your appreciation for the work and dedication of the U.S. Coast Guard, support the Friends of Flying Santa and become a part of a great New England holiday tradition. Find information on donating at flyingsanta.org. America. One of the earliest non-related organizers to help the effort was Edward Rowe Snow, one of Bill Jr.'s teachers at Winthrop High School. Snow would go on to play a pivotal role, taking over The Flying Santa mission after Capt. Wincapaw's passing in 1947, and in the 1970s he would guide the program into its helicopter era that better aligned with emerging flight restrictions.

Snow carried on the tradition for more than four decades, and when he passed in 1982 the Hull Lifesaving Museum stepped up to coordinate the flights. The 1980s saw the era of lighthouse keepers coming to an end, the boat stations remaining and many of the lights continuing to be used for Coast Guard housing. Guardianship of some of the structures transferred to civilian organizations and caretakers. Organizers decided that as long as there were personnel connected to the lights, the Flying Santa would make the Yuletide visits. In 1997, Friends of Flying Santa, Inc. formed to keep alive the tradition of the annual Christmas flights to New England's lighthouses and lifesaving stations. Thousands of hours are volunteered each year to ensure the success of the flights which now encompass more than 30 stops including 61 Coast Guard units from Maine to New York. The helicopter visits and gifts for the children are small tokens of appreciation for the outstanding work of the United States Coast Guard and their supportive families.

"Thousands of hours are volunteered each year to ensure the success of the flights which now encompass more than 30 stops including 61 Coast Guard units ... "

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AFAC Mexico Authorizes MT-Propeller's 5-blade Propeller for King Air 90 Models

MT-Propeller received the AFAC Mexico validation IA-SA00148IB of the EASA STC #10046759 Rev.2 for the installation of the next generation Quiet Fan Jet 5-blade scimitar composite propeller for the Beechcraft King Air B90, E90, C90, C90A, C90GT, C90GTi models. It also includes those with the Blackhawk Conversion powered by PT6A-20, -20A, -21, -27, -28, -135A engines and other TC/STC approved PT6A series engines which do not exceed the propeller TCDS. This installation is already certified by the FAA, EASA, Transport Canada, DGCA India and ANAC Brazil.

According to MT-Propeller Vice President Martin Albrecht the propeller installation on the King Air 90 provides the following advantages:

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ADVERTISING INDEX

1st Source Bank13	Elliott Aviation15	Pilots N Paws31
AvFab25	Factory Direct Models16	Precision Aviation Group10
Banyan9	Ice Shield/SMR Technologies5	Professional Aviation Associates
Blackhawk Modifications Back Cover	Kadex Aero Supply LTD21	Raisbeck Engineering11
BLR Aerospace Inside Front Cover	King Air Academy27	Select Airparts 23
Butler31	Lighthawk 23	Vac-Veterans Airlift Command19
CenTex Aerospace7	Luma Technologies Inc18	
Cleveland Wheels & Brakes24	More Company31	
Corporate Angel NetworkInside Back Cover	Paul Bowen32	

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