King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

JUNE 2015 • VOLUME 9, NUMBER 6 • $4.50

Becoming a Leader

A look at the longest running charter operator in southwest England

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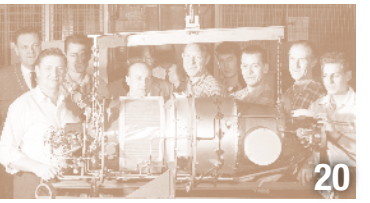

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SUBSCRIPTIONS
King Air is distributed at no charge to all registered owners of King Air aircraft. The mailing list is updated bi-monthly. All others may subscribe by writing to: King Air, P.O. Box 968, Traverse City, MI 49685, or by calling 1-800-447-7367. Rates for one year, 12 issues: United States $19.95, Canada $29.95 (U.S. funds), all other foreign $32.95 (U.S. funds). Single copies: United States $4.50, Canada/Foreign $6.50.

COVER PHOTO
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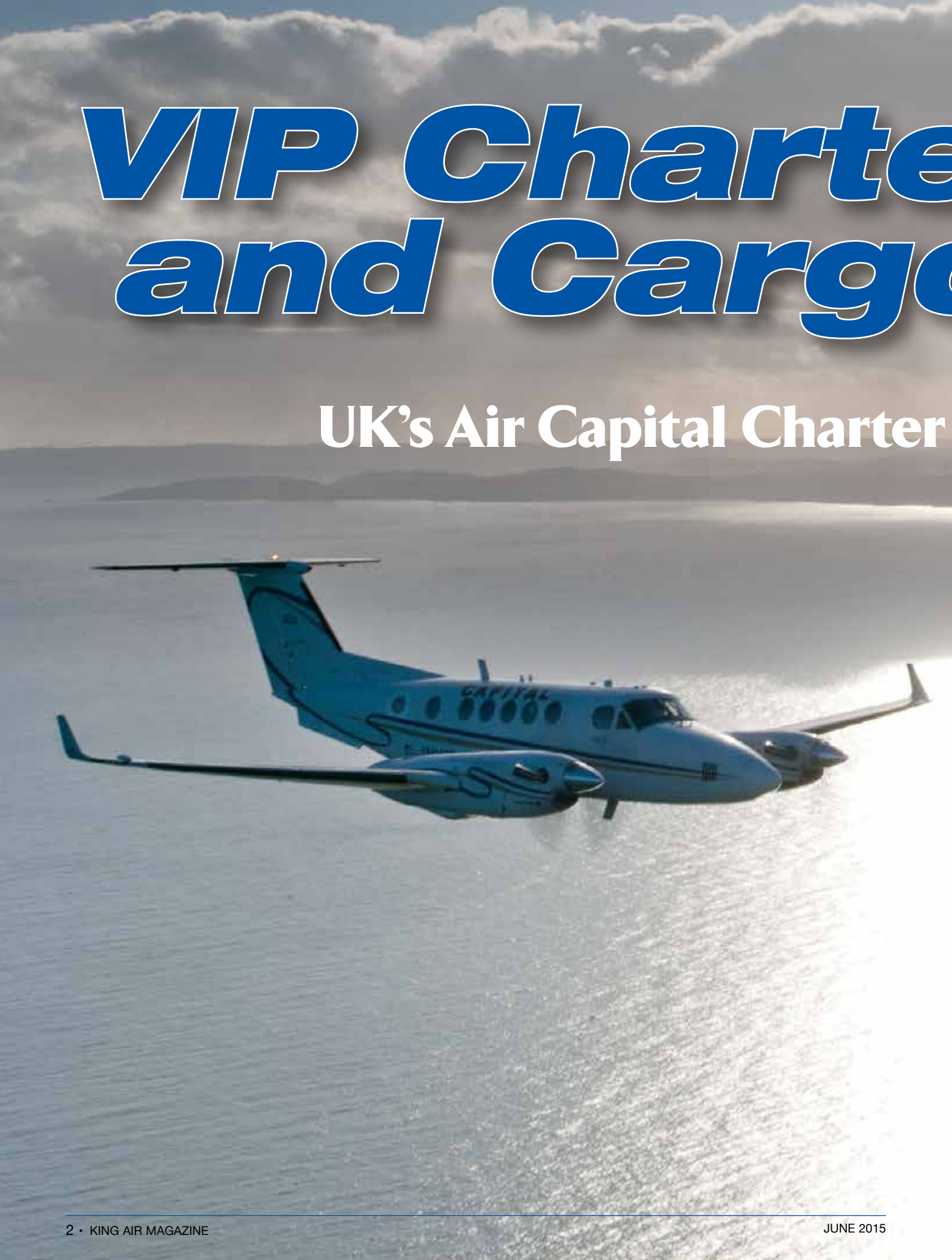

er, Medical
o Services

Uses King Air to stay on Top

by Guy Warner

From humble beginnings, European-based Air Capital Charter has grown to be the leading and longest running charter operator in southwest England. Over the years, the company has added other specialized services, along with three Super King Air 200s, which has made it the leader it is today.

Almost 25 years ago, Malcolm Humphries and his wife, Lisa, began operations at Exeter Airport in Devon with a single Cessna 421 Golden Eagle and, as Malcolm says, "I was the pilot, my wife was operations manager, sales and accounts. This was at the time that the mobile phone network was in its infancy, and we were able to run the company while on the move, and also raising a small child, using the kitchen table as the operations desk." The original focus in their first few years was charter flights, with the fleet increasing by three Piper PA31 Navajo Chieftains.

Air Ambulance operations commenced for Air Capital in the late 1990s, with basic stretchers fitted in the Cessna. This was a less than ideal solution, Malcolm describing the fundamental problems, "I found that getting avgas in far flung international airports was very difficult, sometimes having to taxi to remote airport areas to plead with a non-English speaking flying club member to put 500 litres of fuel into my aircraft using a pump that was designed to put 20 litres into a Cessna 150, then having to pay cash whilst a patient was lying in the back of the aircraft on a stretcher in the searing heat before enduring a six-hour flight back to the UK."

Malcolm and Lisa Humphries have grown their business into the leader it is today and it doesn't look like they'll be slowing down any time soon.

With its leather interior and additional upgrades, Malcolm says the King Air is the perfect European executive transport.

He realized that a turboprop aircraft was required if a more satisfactory service was to be provided and if the business was to expand. In 1998, Malcolm was offered the opportunity to purchase a "used King Air 200 which had seen the world several times over." He now readily admits that this was the best decision he ever made and says that the aircraft became an instant hit with both executive customers and ambulance contractors.

It's strongly agreed that Malcolm's opinion carries some weight due to his extensive experience in general aviation. "I have always been involved in GA, never having been interested in the airline industry. I started flying in the mid-1970s, gaining my license following a few years of gliding. I became a full-time glider tug pilot, as well as a flight instructor, to gain hours and earned my commercial license in 1980," he said.

Malcolm also worked for various air taxi companies, learning the trade before starting Air Capital Charter. As a type rating examiner and instructor in the King Air and the PA3, Malcolm is responsible for the training and assessment of Air Capital's 10 full-time pilots. "I like to train and test my own pilots, so I can ensure the consistency and high standard of my flight crew."

Becoming a Leader

Over the years, Air Capital has survived the turbulent European economic conditions with a continual program of improvement and sensible expansion based on an ethos of tight cost control and a commitment to service and safety excellence. This philosophy has seen the company become the longest established and leading charter operator in southwest England.

The company's fleet now consists of the three Super King Air 200s and five PA31s. The PA31s are engaged exclusively on contract air ambulance operations to Jersey, Guernsey and the Isle of Man. The King Air, G-WVIP, has been modified with Blackhawk -61 engines, Raisbeck streamlining modifications, BLR winglets and Frakes exhausts. It was acquired in December 2008 and was the first ever commercially registered Blackhawk B200 aircraft in Europe. It is faster, more fuel efficient, has a longer range and shorter take-off and landing capacity than the standard model, allowing it to be competitive with light corporate jets such as the Cessna Citation.

With its handsome leather-bound interior, the principal use is for executive and corporate travel. The company can also take care of their passengers' entire journey including transfers, as well as hotel and restaurant bookings. Malcolm commented, "We were very proud to be the first commercial operator in Europe with this fabulous airplane. The King Air has always been a great aircraft, with the upgrades it is now the perfect European executive transport."

An executive aviation handling facility was opened at Air Capital's main base, Exeter Airport, in January 2011. Further validation of the level of service provided by the company came later in the same year with the award of ISO9001 status from the prestigious British Standards Institution.

The core medical business for Air Capital is the repatriation of UK residents who have had accidents or fallen ill abroad whilst on holiday, which can range from a requirement for an intensive care unit to a more simple broken bone. The two standard Super King Airs, G-KVIP (the original purchase in 1998 and still going strong) and G-ZVIP, carry out air ambulance operations throughout Europe and beyond, flying regularly as far as Tenerife in the Canary Islands, North Africa, Eastern Europe and the far reaches of Northern Europe. It is well known that the King Air is particularly good for this role due to the large entrance door and roomy cabin. Both have electric loading ramps and can be fitted with either single stretcher or two stretcher LifePort systems, the industry standard, which incorporate integral oxygen and power supply for monitors, ventilator, defibrillator, and suction and fluid pumps.

The company's focus of the air ambulance business then was the coordination of pilots, aircraft and equipment, often partnering with hospitals and other third party providers of clinical staff. However, in 2012, Capital Air Ambulance was established within the existing company structure and Dr. Terry Martin, who is acknowledged as a world authority on air ambulance procedures, was appointed medical director to lead a specialist medical team. All medical staff are fully trained to be flight medical crew to the standard acknowledged by the UK's National Health Service. In 2013, Capital Air Ambulance

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Malcolm discussing day-to-day matters with an employee, while another adds a flight to the dispatch board.

achieved full accreditation from Eurami, the European Medical Institute.

Recently Malcolm reflected on how this side of the business has changed over the years, "It is easy to have the aircraft and stretcher, but you need to have the medical side to your operation also. I used to think that running an Air Operator's Certificate was difficult, but it is nothing compared to running a medical department and staying up to date with the latest medical equipment and procedures." To which Martin added, "Capital Air Ambulance is the perfect company to develop the kind of service that is rarely available in the UK today; a robust, fast and flexible single point of contact that always looks to deliver the highest possible standards of patient care, balanced with high cost efficiency. I'm proud to be associated with a company with such a pedigree and reputation for excellence, and together we look forward to continuing to raise the bar for patient air transfers throughout our scope of operations."

The service is very comprehensive and ensures that the patient, who may need life support or critical care, receives the best attention, not only from in-flight medical escorts on board the air ambulance, but also when being taken from the hospital to the

In 1998, Air Capital purchased its first used Super King Air 200, which Malcolm says was the best decision he ever made. The company went on to buy two more to add to its fleet.

airport and vice versa on departure and arrival. Capital's experienced operations staff organize, coordinate and facilitate the entire repatriation process and also have in-house linguists covering a variety of languages, aiding communication at the location of the emergency and retrieving and translating documents, when necessary, to enable a complete understanding of the situation.

In the case of the patient being able to travel on a commercial airline with medical assistance, Capital Air Ambulance can help by arranging the flights, medical staff and any necessary medical equipment tailored to suit the patient's needs, obtaining medical clearance with the airline, arranging oxygen in-flight where required, getting assistance at the airport, arranging transfers, hospital admission and follow-up doctors' appointments. If flying home is not an option, the company can even arrange a road transfer from most European destinations.

Malcolm sums up the company's philosophy, "Every air ambulance mission has its own memorable bits. When you fly to a far-off destination to transport someone who has been stuck in a local hospital for weeks, sometimes with no English speaking medical staff, we turn up with our flight medical crew, and the patient and family often break down into tears of relief. It can sometimes take as long as eight or nine hours of flying to bring these people home, and during that time we build a special relationship with them. We have had many letters of thanks from patients and families. Our whole team, whether in flight operations, flight crew, flight medical crew or medical operations, always ensures that the patient gets the best care possible; there can't be any compromise on this."

A third offering of services by Air Capital is the speedy transfer of urgent and secure cargo, either documents or freight. "These transports are just as important as our medical transports and we treat them the same way," Malcolm says.

The King Air's Role

As a fan of the King Air, Malcom says it has "presence" when parked on the ramp. "Unless you really know what to look for, you would never be able to tell how old the aircraft is; it could be 35 years old or three years old! The

All of Capital Air Ambulance's medical staff are fully trained to be flight medical crew to the standard acknowledged by the UK's National Health Service. In 2013, it achieved full accreditation from the European Medical Institute.

new winglets have really brought the aircraft into the 21st century," he added.

As mentioned, the company's main base is at Exeter International Airport on the southwest coast of England, with two sub-bases on Jersey in the Channel Islands and on the Isle of Man. Thirty-five full-time staff, including an engineering and continuing airworthiness manager, are mostly based at Exeter, with two flight crew members in Jersey and three on the Isle of Man. A roster of over 70 part-time medical staff are available on call.

All flight training on the King Air is completed in the aircraft. Malcolm notes, "I think that it is really important to ensure that the aircraft are looked after properly. We buy all of our own aircraft spares, but we contract the maintenance of the aircraft out to a locally based company called Iscavia, with whom we have a very close working relationship. The King Air has proved to be robust, reliable and reasonably effective to maintain with parts that are relatively easy to obtain."

Garmin GTN750 units have been fitted into the King Airs recently and the company is currently going through the process of converting to the use of electronic flight bags to carry Jeppesen and operations manuals, etc. Slightly tongue in cheek, Malcolm adds, "At the moment, because our operating area is so large and the paperwork we have to carry is enormous, the pilot has to be extremely adept at climbing over the mountain of manuals to enter the cockpit!"

Since 2014, Capital Air Charter has been part of the Rigby Group, which under its British International Helicopters (BIH) brand already represents one of UK's largest domestically owned commercial aviation and offshore helicopter services companies. There are plans to grow Capital's market share extensively over the next few years and to develop both its aero medical services and its contracted charter capabilities.

The last word may be left to Capital's Sales Director Lisa Humphries, "While this is undoubtedly a pivotal moment in our history, for our existing customers it will feel very much like business as usual. We will continue to deliver the high standards and approach to service that has made us the region's number one charter operator, and will carry that ethos forward as our membership of the Rigby Group enables expansion across the operation." KA

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"Subject to Additional

A Discussion of Billbacks on Core Charges

by Dean Benedict

In earlier years, a core charge for an exchange part was like a little insurance policy for the vendor to ensure they got a unit back in exchange for the one they sent out. It's just like a trip to the auto parts store. When you buy a starter for your car, they bill you a core charge. After you take out the old starter, install a new one, and then return the old part to the store, they refund the core charge portion. In aviation, some vendors charge the core value up front and refund it later; the majority, though, allows 30 days for return of the core unit and only bill the core charge if one was not received.

Back when I managed Beechcraft West in Van Nuys, core charge billbacks were the exception, not the rule. In rare cases, the customer's core unit was badly damaged and deemed BER (beyond economical repair), so the core value had to be paid. But back in those days, it wasn't common to get partial core billbacks – maybe once every couple of years. Now, it's every other week!

After the economy went south in 2008, I saw a definite increase in partial core charge billbacks for parts or repairs that were "beyond the scope of a normal overhaul." In the last several years, it has spiraled out of control!

I think I'd rather have a root canal without anesthesia than go to a customer who has just spent a bunch of money on King Air maintenance and tell them they need to pay more because their cores were no good. I'm not sure which is worse – the outrageous cost of parts these days, or the continual billbacks on cores. The end user is getting taken advantage of both coming and going.

There are a host of components on a King Air that go in and out of the rotable pool. Landing gear drag legs and actuators, starter generators, brakes, blowers, engine gauges – these are just a few. Recently, I exchanged a fuel flow gauge because the needle was sticky. A few weeks later I got a billback on the core for $250 with a note that the movement is sticky, and that's not part of a standard overhaul. Really?

A few months ago, I exchanged a GCU (generator control unit) because the generator would not come online. The billback on that core was $1,000 for a relay. A relay? Seriously?

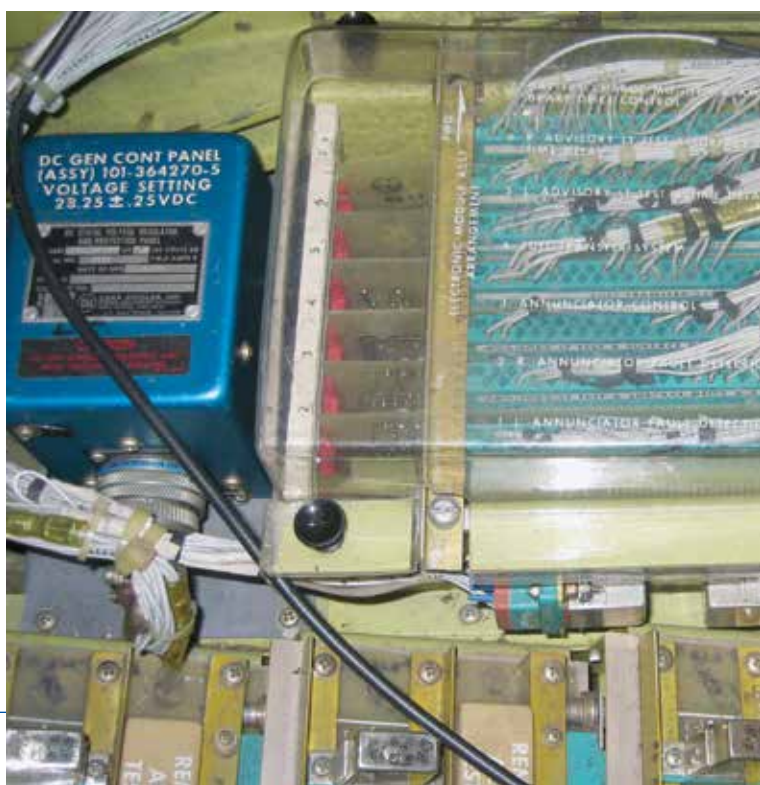
Vendors versus Overhaul Shops

Let me make one thing clear – the billback comes from the shop that overhauls the core unit. Their business is making exchange cores serviceable again. The vendors that stock and sell rotable aircraft parts do not originate core billbacks, they just pass them along.

Certain vendors have a sister company that overhauls the components they sell. Others have no such affiliation and shop around for overhaul facilities to maintain their inventories. Some are very selective with their overhaul affiliations, others choose the overhaul shops with the lowest price.

The Agony and the Actuator

A couple years ago, I purchased an exchange ice vane actuator and sent my customer's core back to the vendor. This particular vendor had a sister company that overhauled these cores. Several months elapsed with no word from the vendor, so naturally I assumed the core was good. Then I got an email noting that the core was BER and they were going to invoice me for the full core value of $3,000! I was extremely displeased!



Billing”

I called the vendor and spoke to a guy (let’s call him Harry). At first he claimed the exterior case was bad and the cost of replacing it was prohibitive, hence the BER designation. I knew darn well the case wasn’t bad when I took it off the aircraft. I demanded the overhaul shop provide a breakdown report and pictures of the bad case; I received nothing. I asked why it took three months to assess my core. They said the shop was “backed up.” I pestered Harry on this actuator core, and he finally admitted to me that it needed a new motor, a $500 part.

I said, “Fine; get the motor, overhaul the unit, and invoice me for a $500 billback.” Nothing happened. Six months went by and nary word from Harry. Then, out of the blue, their billing department sends an invoice for $3,000, plus the freight charges for sending the core back to me. I never asked for the core to be returned to me. Their exchange policy explicitly states that they

A GCU (generator control unit) is one of the King Air components that are part of a rotable pool.

only send rejected cores back to the customer *at the customer's request*. Nevertheless, the core arrived the next day, with a bright red BER tag attached.

I called again and was told that Harry was "in a meeting," "out of town" or otherwise unavailable. Messages and emails to Harry were unreturned, and someone else called back. We forwarded that person the vast string of emails between Harry and me. They promised to get to the bottom of the situation, but of course, nothing happened. It's now almost two years later. I never paid their invoice … and I never ordered another part from them.

Probing into Fuel Probes

I cannot remember getting a billback on a fuel probe core before 2008. It just didn't happen. But after the economy went south, billbacks on fuel probe cores were suddenly commonplace. Today, if a customer mentions a fuel quantity issue, I tell them right away to expect a core charge billback if it turns out to be a bad probe.

We get fuel probes from wherever we can. I have my favorite suppliers and I check with them first, but if they don't have it, I have to look elsewhere. We have noticed that no matter which vendor provided the exchange probe, if the core was overhauled by Shop XYZ, then there would be a billback on the core. We also noticed that the rejected part which was "over and above the cost of a normal overhaul" was, in each and every case, the flange. We started querying vendors when purchasing fuel probes to see if we could avoid Shop XYZ.

Once I checked with a favorite vendor and they had the exact probe I needed. "Did it come from Shop XYZ?" I asked. They replied that they didn't use Shop XYZ, and preferred Shop ABC. How interesting. We ordered the probe, installed it and sent back the core. Guess what? No core billback. No rejected flange. That sure strikes me as odd.

Exchange Price versus Core Value

I learned a long time ago that the cheapest exchange often comes with a higher core value. If the overhaul shop is charging a low price to make a core serviceable again, then chances are they will find plenty of problems with the core that are above the cost of a normal overhaul and a core billback will be the result.

This does not mean that I automatically go for the most expensive exchange! I shop around like crazy on behalf of my customers, and I'm very picky with my vendors. Unlike the aforementioned Harry, there are some really good vendors out there, who care about retaining their customers. They, too, are concerned about the adverse effects of core charge billbacks.

The Good Vendor

Remember my GCU core with the $1,000 billback for a relay? As it happens, the vendor in that case was superb. At my request, they obtained a list of GCU parts included in a normal overhaul. Unfortunately, that $1000 relay was not on the list. They then searched around and unearthed a serviceable GCU for $600. They substituted it for my bad core, thus reducing my billback to $600 and saving my customer $400. It's not a huge amount of money, but every little bit helps. Most importantly, it softened the blow of a core charge billback, and they provided fantastic service to me and my customer. This wonderful vendor is the same one that prefers Shop ABC over Shop XYZ when it comes to fuel probes.

Some savvy vendors have observed that certain cores come back with the same extra charge for the same extra part, time after time. In response, they have raised their exchange price to account for that extra part. Now, they don't have to invoice me and collect from me on a billback; and I don't have to invoice and collect from my customer. It's a smart thing to do when the circumstances warrant it.

Overhaul or Exchange it?

You might remember my article on starter generators which must be overhauled every 1,000 hours. I suggested to operators of newer King Airs to have their starter generators overhauled instead exchanging them. The very first overhaul on a starter generator should be pretty routine. But if at 1,000-hour total time, you exchange your "young" core units for a pair from the rotable pool, you have no idea how old those exchanges really are. They might have 5,000 to 6,000 hours on them. And when it's time for those exchanges to be overhauled again, there could be some ugly core charge billbacks.

If you have a newer airplane, consider overhauling your components. If you are using exchange parts, consider pushing back against core charge billbacks to get some proof of their validity.

Get Reports, Pictures and the Part

In the event of a core charge billback, find out if the vendor used by your maintenance shop got the teardown report from the overhaul shop. I find the best vendors always include such reports when they are billing me for a bad core, and I put those findings into my invoice to my customer. There must always be an explanation for a full or partial core rejection.

These days, I press a lot harder for proof of a bad core. Many times I ask for pictures. I now ask for a list of parts included in the normal overhaul, and/or a detailed description of the standard overhaul. I want a clear picture of what is included in the exchange price my customer already paid.

Sometimes I request the rejected parts be returned to me. It's a lot of extra time on my end, and it's nothing I can bill for, but I refuse to just roll over every time a core charge billback comes down the pike.

Clearly you can see that I am not convinced all core charge billbacks are justified. I owe it to my customers

to get them the best bang for their maintenance buck. I would like to see aircraft owners and managers, along with aircraft maintenance technicians like myself, and even the vendors selling exchange parts, band together and take the overhaul shops to task. I think we should hold their feet to the fire, so to speak. The good shops will have nothing to hide.

This is a tough and complicated problem. The overhaul shops will be the first to declare that the rotable pool is older; and that's true. Some units have been around the block quite a few times. Eventually, things that are not part of the standard overhaul need to be replaced. But I still maintain that as consumers of exchange aircraft parts, the end user is entitled to full disclosure when it comes to core billbacks. To this end, I feel maintenance shops and parts vendors should support the end user and assist them in verifying that a billback on a core unit is justified and fair. KA

About the Author: Dean Benedict is a certified A&P, AI, and has almost 40 years of experience in King Air maintenance. He is president of Honest Air, Inc., which specializes in Beechcraft King Air maintenance and repair.

If there is a particular maintenance issue you would like Dean to address in a future issue, please email Editor Kim Blonigen at kblonigen@cox.net.

The Brake Deice Option

by Tom Clements

A rather popular optional system that you will find installed in lots of King Airs is Brake Deice. This system is only offered on King Airs with dual main landing gear wheels, so you will never find it on a member of the 90-series, with the exception of the F90 group, since they, like their bigger 100-, 200- and 300-series brothers, have dual main wheels.

Since it is optional (not standard) equipment, the brake deice description, along with its operational Limitations and Procedures, will usually be found in the *Supplements* section of the POH rather than in the *Systems Description* section.

The winter-time phenomenon of frozen, locked brakes was never an issue in the early days of King Airs since they had rather large, single, main gear wheels and tires. It appears that any slush that the tire throws upward while taxiing, taking off, or landing, misses the brake assembly. Soon after the first model 99s and 100s appeared in the late 1960s, Beech began receiving reports of locked brakes due to ice accumulation. The smaller dual wheels and tires appeared to throw slush up quite readily onto the brake assemblies. If the brakes were warm due to friction from usage, the slush would turn to water, run into the assembly, and then freeze solid if and when the assembly temperature dropped below freezing … such as when stopped in the run-up area or on the ramp, with cold OATs and no frictional heating taking place any longer since the tire was not rolling.

Somehow, the test pilots in Wichita (a place that can have some very cold winter temperatures!) were lucky enough to have avoided this experience during the certification flight testing of the airplanes and initially the reports were attributed to poor piloting technique, not to a design deficiency. "Well, the pilot shouldn't have used the brakes so much to melt the slush in the first place!" Or, "He was asking for trouble when he set the parking brake!" Or, "The pilot should have sprayed some deicer fluid – isopropyl alcohol – on the assemblies before he taxied out!"

Then one winter day on the ramp outside the factory's delivery center, Mrs. Olive Ann Beech herself and her companions were inconvenienced by a lengthy time delay when it was found that her A100 had succumbed to the locked brake scenario. It was Standard Operating Procedure at the factory to always have a "safety pilot"

– mechanic, actually – in the cockpit monitoring the brakes during the towing process. (Once or twice a tow bar had come loose and the affected airplane rolled along with no back-up means of control, so the cockpit rider became the order of the day.) Perhaps the safety rider in Mrs. Beech's A100 was unconsciously riding the brakes? No one will ever know for sure, but the fact is that now the chairwoman of the board herself was inconvenienced by the frozen brakes phenomenon. Is it any surprise that the deice option got designed, certified, and available within less than a year?

As you well know, a small percentage of the air that leaves the PT6's compressor flows into lines that direct this "bleed air" into the cabin. The larger line sends its bleed air to the Flow Control Package, and from there, to the cabin's environmental systems for pressurization and heating purposes. This branch is called "Environmental" bleed air and is also referred to by the slangy term "Big P3."

The smaller line – known as "Instrument Air" or "Pneumatic Air" or "Little P3" – sends its air into a regulator where its pressure gets reduced to about 18 psi above ambient pressure and this is what the Pneumatic Pressure gauge in the cockpit is reading.

Before the Little P3 line leaves the wheel well area, those airplanes with the brake deice option connect a tap off to it and this branch goes to a solenoid control valve and through a flexible hose on the main gear strut down to the distributor manifold around the brake assembly.

Thus, brake deice uses "raw," unregulated P3 air. The temperature of this air depends on both the OAT and, more importantly, the speed of the compressor: N_1 or N_g speed.

To use brake deice properly, a few facts must be recognized. First, there is a limitation that tells us not to use it if OAT is above 15° C. Of course, in that warm of a situation brake freezing is of no concern. However, if used, wheel well temperatures can exceed a comfortable, safe value.

Second, one is almost assured of creating undesirably high wheel well temperatures if the system remains on too long with the gear retracted. That is why there is a timer in the control circuit that shuts off the system 10 minutes after the gear is up. The POH directions tell you to turn off the brake deice switch yourself if the system has not automatically terminated operation – evidenced by the proper annunciator light(s) extinguishing – 10 minutes after "Gear Up."

Third, the bleed air that is tapped off of the Instrument Air line and directed to the brake assembly robs some of the normal "Little P3" flow into the other systems. This results in both interesting and critically important considerations.

At the "interest" level is the fact that at last 85% N_1 is required to have enough air to operate both the brake deice option and the wing boots. Furthermore, on the ground, High Idle must be used if brake deice is to be effective. The temperature of the bleed air at Low Idle may not be sufficient to guarantee good brake deicing.

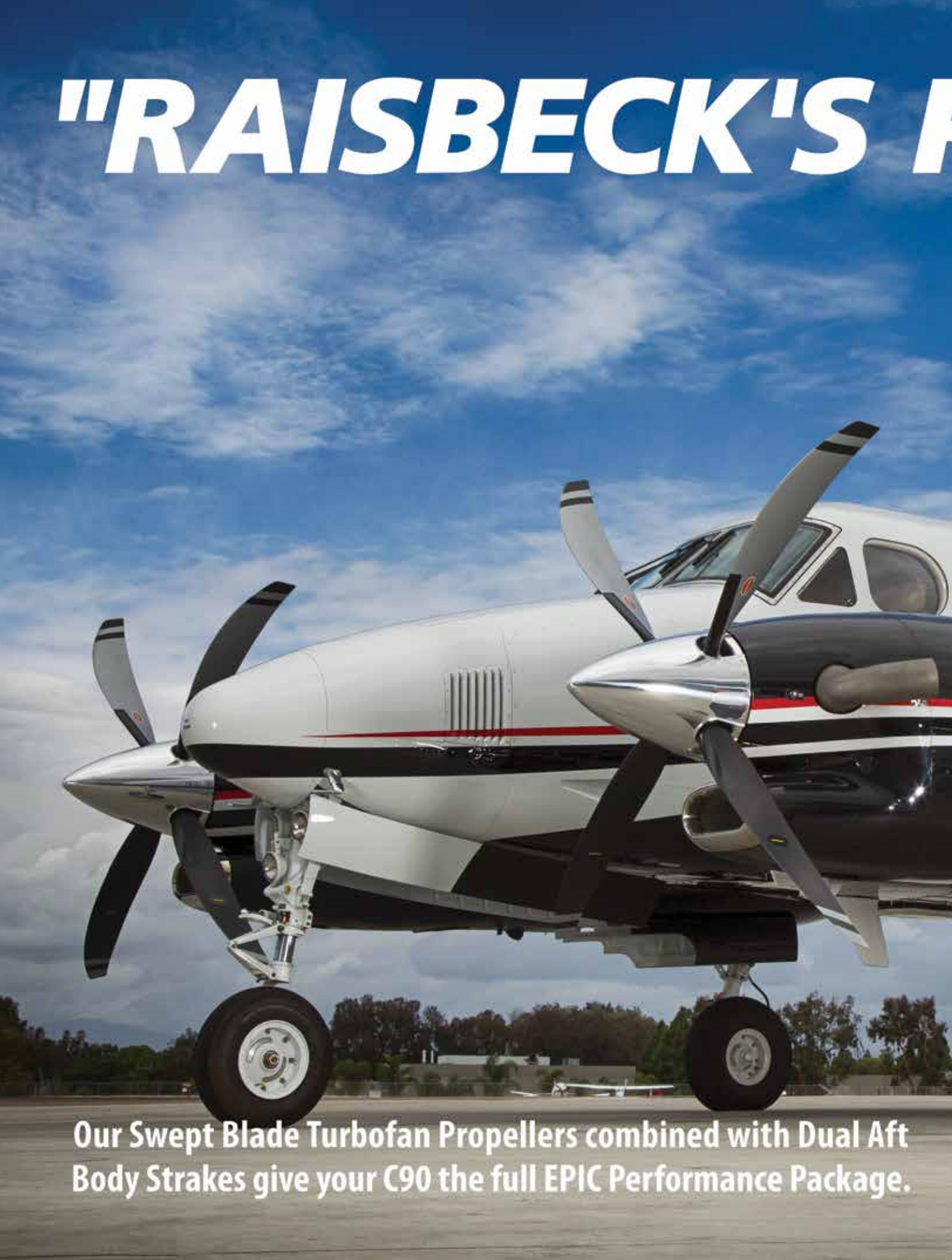
Also, don't be surprised to see a momentary illumination of left, right or both Bleed Air Fail annunciators when using boots and brake deice together since pneumatic pressure can drop so low as to activate the low pressure sensing switches attached to the failure warning tubes.

At the "critical" level is the effect of brake deice usage on Rudder Boost. The Rudder Boost system on 200s and F90s operates considerably different than that installed on the 300-series, so I need to discuss this in two separate presentations. First, for the 300 and 350 …

In these airplanes, Rudder Boost is a mandatory, no-go system since without it the worst-case, engine-out situation requires the pilot to use more rudder force than the certification rules allow. The force applied by the Rudder Boost system comes from the same servo motor that the autopilot system uses for yaw damping. The force varies, depending upon the magnitude of the power differential between the two engines. This power difference is sensed by propeller torque transducers on the 350s but by raw, Little P3 pressure in the 300s. That leads to a problem.

With brake deice activated, the P3 pressure sensor for the good engine feels less pressure than it should

"RAISBECK'S P



Our Swept Blade Turbofan Propellers combined with Dual Aft Body Strakes give your C90 the full EPIC Performance Package.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– since air is escaping out of the brake deice manifold – and hence the system applies less rudder force than it should. Therefore, no takeoff or go-around should be initiated with brake deice in use since the pilot would not have the proper help in applying rudder force.

"So, we'll tell the pilot to turn off brake deice on runway lineup and on final approach, right?" says Mr. Beechcraft engineer. "No!" responds Mr. FAA certifier. "Someday a pilot will forget that important step. You need to make it automatic and fool-proof."

In response to that directive, Beech made a system change in the model 300 that deactivates brake deice whenever the Autofeather system completes its arming process … as both power levers are well-advanced. So if the crew does not turn off brake deice themselves when taking the runway, it will deactivate automatically when the Autofeather annunciators illuminate. Once the landing gear is retracted and a safe altitude is reached after departure, the Autofeather switch must be turned off before brake deice may be used to warm the main wheel wells to melt any ice that has accumulated there. Likewise, when we need to accomplish our once-a-day exercise of the brake deice valves, even in the summer, we must assure that the Autofeather annunciators are not on … by turning the Autofeather switch off or by retarding power levers. Just remember to reposition the switch back to Arm when the deice valve exercise is finished.

It is a very nice, simple, improvement that the 350 measures differential power via torque, not via P3 pressure. Although with brake deice on, slightly more N_1 and ITT will be necessary to create the same torque, the yawing tendency relates to torque differential directly, so brake deice has no effect on the necessary rudder assist that is delivered. Therefore, there is no autofeather-related shutoff of the brake deice system in 350s.

In the case of the 200- and F90-series, Rudder Boost is not a no-go system. (None of the 100-series airplanes have a Rudder Boost system at all.) Although it is standard equipment, it is provided not by FAA directive, but simply to make the airplane somewhat easier to handle in one-engine-inoperative operations. It therefore follows that the brake deice system's effect on Rudder Boost should be understood, but even if it impacts Rudder Boost negatively, it is not a critical concern.

First, with brake deice robbing air from the engines' compressors, ITT may be about 20° C higher at a given power setting. If the torque value found on the "Minimum Takeoff Power" graph in the POH cannot be achieved with this additional ITT, then brake deice must be turned off so that Minimum Takeoff Power *can* be reached.

Second, in this series of King Airs, unlike in the 300 and 350, Rudder Boost is an all-or-nothing proposition, not varying the force based on the difference in engine power. The sensor that initiates the rudder boosting force is a "Delta P" switch tied in to the left and right Little P3 lines, looking at raw, unregulated P3 pressure. With Brake Deice on, since some of that air is being diverted overboard, the Delta P switch will see less of a difference so rudder force will not be applied until more power is added on the "good" side.

Realizing that brake deice usage during takeoff has these negatives associated with it, and knowing that a brake assembly is not going to freeze up while the wheel is turning, I strongly suggest that you always turn off Brake Deice as part of your Runway Lineup procedure on *any* model King Air you fly.

The actual valve that opens to direct P3 to the brake assembly is a bit of an oddity. Instead of being a simple solenoid valve similar to the Instrument Air Shutoff valve aft of the firewall, this valve is electrically activated but pneumatically operated. The solenoid opens a port that permits P3 to provide the force that actually moves the valve. This means that the valve does not move unless the engine is operating, supplying raw Little P3 pressure.

Long ago, it was found that these valves were prone to not operating when they should: Either not opening when turned on or not closing when turned off. Analysis of the situation convinced Beech that regular exercise was necessary for the valve to remain relatively trouble-free. Now, all of the POH supplements direct us to cycle the valves once each day, regardless of OAT. I encourage you to incorporate that into your checklist procedures as you begin the descent into your home base airport on the last leg of the day. In that manner, if a valve fails to close, (1) it won't be subject to too high temperatures for too long since you are using descent and approach power settings and (2) the engine will soon be shut down at the hangar, eliminating the concern about hot bleed air continuing to flow.

The F90-, 100- and 200-series contain a single, green advisory annunciator that illuminates to indicate that power is being sent to the brake deice valves. In no way, however, does that annunciator actually confirm proper valve operation. One or both valves could fail to function and yet the light is still there. Hence, when doing your once-a-day, in-flight test, do not merely observe the annunciator. Make certain that both sides show a minor drop in torque and a minor increase in ITT when brake deice is selected on and, perhaps even more important, make sure they return to normal when the system is turned off. You will also observe a small fluctuation in cabin altitude as the bleed air supply is slightly affected during the test.

The 300s and 350s contain separate, left and right, brake deice advisory annunciators and these are triggered by actual valve movement to the open position. Nice! However, I still encourage you to monitor torque and ITT when you do your in-flight test.

I want to make a comment or two about that 10-minute timer that shuts off the system after landing gear retraction. First, the timer does not start unless brake deice is on. In other words, you could be well into the climb or cruise and think, "Dang! I forgot to turn brake deice back on after that winter takeoff to thaw out the wheel wells!" No worries, it will come on now and operate for up to 10 minutes.

On the other hand, suppose you turned on brake deice shortly after takeoff and ran it for, say, six minutes. Now, in the descent for landing, you'll have four minutes available for preheating the brake assemblies before extending the gear, right? Wrong! Once the timer starts with the gear up, it runs its course completely even if the switch is turned off prior to the end of the 10 minutes. Again, no worries: Once the gear leaves the wheel wells, brake deice will function with no time constraint at all. For what it's worth, you can also pull and reset the Brake Deice circuit breaker to reset the timer and allow up to another 10 minutes of gear-up brake deice operation.

To conclude, I'll run through a typical winter usage scenario where there is snow or slush on the ramp and/or taxiways. On starting, I'll not only take the first engine's condition lever to High Idle, but the second one as well. Now, after starting, the brake deice switch gets turned on and I check for the annunciator(s). As I begin to taxi, I will pull the condition levers back to Low Idle but if I need to stop in the run-up area or hold short of the runway, I will again select High Idle. Back to Low Idle as I roll onto the runway and I will turn the brake deice switch off now.

Unless an engine fails, I will leave the gear extended for the first 400 or 500 feet after liftoff, remembering to be below the gear retraction speed limit as I finally bring them up. Once I am high enough that an engine power loss would be relatively uneventful – maybe pattern altitude or above – I will now turn Brake Deice back on, check the time, and run it for five minutes or more. If I get distracted, I know it will shut itself off but I'll eventually back it up by turning the switch off, too.

If the temperature at the destination airport is also close to or below freezing, then I will turn the brake deice switch on either before or right after the gear is extended. I'll leave it on until performing the shutdown procedure and, if I get any lengthy stops while taxiing, I will remember to select High Idle while stationary. Got it? Good! KA

About the Author: King Air expert Tom Clements has been flying and instructing in King Airs for over 43 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.

A Marriage Made in Wichita PART TWO

The union of Pratt & Whitney Canada's revolutionary PT6 turboprop engine with a pressurized Beechcraft airframe proved an unbeatable combination that set a new standard for small, cabin-class business aircraft.

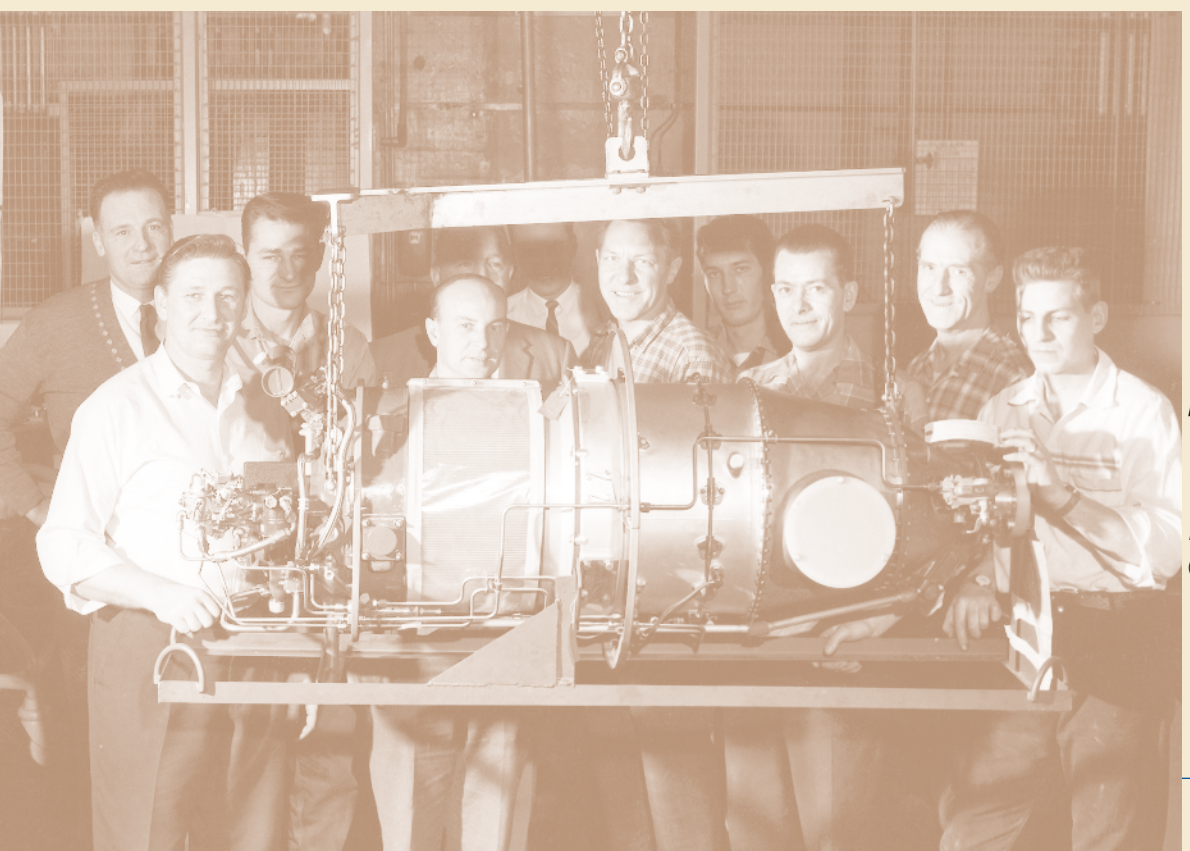
by Edward H. Phillips

As World War II drew to a close, the introduction of turbojet-powered military fighters did not escape the notice of Walter H. Beech. Speed was in his blood, and to an aviation pioneer like Beech, the quest for more speed was a never-ending odyssey. After his death in 1950, it fell to his wife and company co-founder, Olive Ann, to take the greatest gamble in Beech Aircraft's 31-year history.

Beginning in 1958, Pratt & Whitney Canada (PWC) officials consulted with Beech Aircraft Corporation in an attempt to determine the size and configuration of a small gas turbine engine. The Kansas-based company was studying concepts for a new, turbine-powered business airplane and had unveiled its latest design at the National Business Aircraft Association convention in 1961. To the shock and dismay of PWC representatives who saw the design, it was displayed with French Turbomeca Astazou turboprop engines on the wings.

The reason was simple: the PT6 was not even included in Beech Aircraft's shortlist of potential engines. Instead, in May 1961, company executives attended the 24th International Air Salon in Paris to see the latest in aerospace products. While in France they met with officials of the Societe Francaise d'Entretien et de Reparation de Materiel Aeronautique (SFERMA), with whom the company had previously signed a technical agreement aimed at co-development of turboprop engines. Beech officials proposed installing SFERMA's Turbomeca Astazou gas turbines in the twin-engine Baron and Travel Air, and the more powerful Turbomeca Bastan in the venerable Model 18.

It is important to note that large turboprop-powered business aircraft, particularly the Gulfstream I equipped with Rolls-Royce Dart engines, already were in service and proving popular with corporate flight departments. What was missing, however, was a small, cabin-class,



On December 22, 1963, personnel at Pratt & Whitney Canada posed for the camera as the first production PT6A engine was prepared for shipment to Beech Aircraft Corporation.
(PRATT & WHITNEY CANADA)

turbine-powered business airplane. In December 1961, Frank E. Hedrick, executive vice president of Beech Aircraft Corporation, unveiled a wind tunnel model of a turboprop-powered, 300-mph executive transport that was currently under engineering study. If it was placed into production, the new Beechcraft fit into the product line above the Model 18, but would sell for a price well below that of a Gulfstream I.

One year later, Beechcraft salesmen viewed a full-scale mockup of the proposed transport, now designated as the Model 120. Marketing officials listened and carefully recorded every word the dealers and distributors spoke, realizing that there was no one better qualified to render judgment on the mockup than the men who would sell and support the airplane in the field. The airplane would be powered by Turbomeca Astazou engines, although PWC was still pleading its case for Beech to at least consider the Canadian engine. [1]

"The first lady of aviation had a great deal to do with the success of the PT6," said J.C. "Jack" Charleston, a former PWC employee, during a speech before the Canadian Aviation Historical Society. According to Charleson, "Mrs. Beech was behind it all, this very sensible marriage of a Canadian engine to an American airframe." What Charleson meant by "behind it all" centered on her comments during a meeting in 1961 between Beech Aircraft engineers and PWC president

A Model 65 Queen Air airframe was modified to accept PT6A-6 engines in a bid to attract an order from the United States Army for a turbine-powered version of the piston-powered L-23F already in service.

(BEECH AIRCRAFT CORPORATION/TEXTRON AVIATION)

Thor Stephenson, who was in Wichita to once again pitch the PT6 as a potential engine for a new Beechcraft executive transport. The engineers, however, objected to the PT6 claiming its high cost ($15,000) would make the airplane's price prohibitive.

The modified Queen Air (serial number LG-1) was designated NU-8F and first flew in May 1963 before delivery to the Army in March 1964. It was a benchmark airplane that paved the way for senior management at Beech Aircraft to approve a commercial version designed for the corporate market. The NU-8F was truly the "grand daddy" of the King Air product line. (BEECH AIRCRAFT CORPORATION/TEXTRON AVIATION)

Suddenly, Olive Ann rose from her seat and is reported to have proclaimed, "Listen, I don't normally interfere with engineering or management decisions, but I still control this outfit. I'm telling you to take those engines, which are costing us nothing, and put them in the airframe. Just try it." The airframe she referred to was the Model 67 "Queen Air," then the company's flagship product. When the boss spoke, people listened.[2]

Fortunately for Olive Ann Beech and the company she commanded, the timing of her directive could not have been better. The U.S. Army had recently placed a follow-on order for more Lycoming-powered Beechcraft Model 65 *Queen Airs*, designated L-23F. Engineering vice president James Lew and PWC president Thor Stephenson worked together and promoted the turbine-powered L-23F to Army brass, explaining that the two company's would retrofit a commercial Queen Air with PT6 engines at no cost to the service. In addition, a 100-hour flight test program would be part of the proposed package. The Army agreed to the plan.

A Model 87 Queen Air, serial number LG-1, was selected and the conversion process began. The six-cylinder, 340-horspower Lycoming IGSO-480 engines were removed and structural changes were made to accommodate the PT6A-6 engines. The cabin remained unpressurized, the empennage was redesigned and fuel capacity was increased. In May 1963, the modified Beechcraft had been designated the NU-8F and was undergoing ground tests at the Wichita factory. After completing its first flight, the NU-8F entered a test program that lasted 10 months.

In the wake of success with the NU-8F program, PWC had finally convinced Beech Aircraft officials to use the PT6 on its next business airplane. By 1963, it was time for a decision – build the Model 120 along with another proposed design, the piston-powered but pressurized Model 85D Queen Air; postpone a decision or maintain the status quo. As William H. McDaniel writes in his history of the company, *Beechcraft – 50 Years of Excellence*, "a top-level decision of great importance

A company photographer caught the first King Air prototype, serial number LJ-1, registered N5690K, as it lifted off the runway on its first flight, January 24, 1964. The PT6A-6 engines delivered 550 shaft horsepower (shp) for takeoff and 500 shp for continuous operation. Cabin pressurization was accomplished using a Roots-type supercharger installed in the left wing nacelle. Maximum differential was 3.4 psid. The Model 65-90 featured a maximum speed of 280 mph – more than 50 mph faster than the piston-powered, military L-23F.
(BEECH AIRCRAFT CORPORATION/TEXTRON AVIATION)

was ready to be made. It was the kind of decision that emphasized the loneliness of command." [3]

Finally, on August 14, 1963, Beech officials announced availability of the new Model 65-90 "King Air" with deliveries beginning in the autumn of 1964. Boasting a cruise speed of 270 mph, a pressurized, well-appointed cabin and the ability to operate into and out of small airports, the King Air was the right airplane for the company's next-generation executive transport. The timing, too, was good. By the mid-1960s companies were beginning to buy increasing numbers of first generation business jets such as the Learjet 24 and North American Sabreliner. The *King Air* benefitted from their success that helped build demand for a small business turboprop.

Beech Aircraft officials, however, were still concerned whether customers accustomed to the age of the radial engine and the Model 18 would place an order for the sophisticated King Air. Opting to proceed with caution, the company ordered 29 PT6A-6 engines from PWC. That number was thought to be sufficient based on a market survey projecting demand for only 10 airplanes annually. Each of those engines, however, cost Beech Aircraft a whopping $25,000. According to PWC, it cost the Canadian manufacturer $21,000 in parts from vendors. A decision was made to quip the factory in Longueuil to manufacture the high-cost items such as gas generator and exhaust cases, turbine wheels, compressor discs, impellers and gears.

Meanwhile, in Wichita, the engineering department was busy preparing the King Air for FAA Type Certification and production. John Wilson was one of the engineers assigned to the program. He recalled that in 1963 his knowledge of turbine engines was nearly nonexistent.

After an exhaustive flight test program, the Model 65-90 received FAA certification in May 1964. Corporate operators quickly embraced the new King Air. Factory workers built 112 airplanes during 1964-1966 before production shifted to the improved Model A90 that featured PT6A-20 engines. The A90 was the first King Air to feature reversible propellers. (BEECH AIRCRAFT CORPORATION/TEXTRON AVIATION)

"At Beech we took a "tinker toy" approach to new aircraft. With the *Queen Air* we mated a [Model 50] *Twin Bonanza* wing center section, wings and empennage to a larger cabin. Next, we took the PT6 installation that worked so well on the NU-8F and adapted it to a new pressurized fuselage." [4]

The prototype Model 90 made its first flight on January 20, 1964, at the factory. More than 3,000 spectators were on hand to witness the flight, which included a high-speed pass in front of the crowd. The airplane's two PT6A-6 engines each produced 550 shp for takeoff and 500 shp for continuous operation, along with 1,192 pound-feet of torque. It had three-blade, constant-speed, full-feathering propellers, but did not feature a reversing system. A single Roost-type supercharger mounted in the left wing nacelle provided pressurization of the cabin (the PT6A-6 powerplant lacked sufficient bleed air for pressurization). Cabin pressure was limited to 3.4 pounds per square inch differential (psid) with an overpressure limit of 4.0 psid.

In terms of size, the Model 90 was similar to the Model 65-A80 with a wingspan of 45 feet, 10.5 inches, a height at the tip of the vertical stabilizer of 14 feet 2.5 inches, and a fuselage length of 35 feet six inches. Fuel capacity included 262 gallons in the wing tanks and another 122 gallons in nacelle tanks. Maximum gross weight was 9,300 pounds.

The successful first flight kicked off an intensive certification program that included five aircraft and resulted in the FAA issuing Type Certificate 3A20 on May 19, 1964. In June, the company set a retail price for a standard Model 90 of $320,000. By that time the company was holding orders worth $12 million, and executive vice president Frank Hedrick prophesied that sales of the King Air would climb to $22 million by the end of 1965. The first delivery of a King Air to a corporate operator occurred on July 7, when officials of United Aircraft of Canada, Ltd., accepted the keys from Olive Ann Beech. In September, the sixth Model 90 built was delivered to Atlantic Aviation Corporation's New York Division, based at Teterboro, N.J.

When the National Business Aircraft Association convention began in November 1964, eight King Airs were already in service, and the fourth airplane built was busy in Europe conducting demonstration flights. The

tour resulted in sales of 27 King Airs, including orders from Volkswagen, Daimler-Benz and the Aga Khan.

As the King Air matured in the next few years, Beech engineers implemented a series of improvements to the airframe and PWC upgraded the PT6 to keep pace with those changes. After manufacturing 122 Model 90s from 1964-1966, Beech Aircraft introduced the A90 powered by PT6A-20 engines rated at 550 shp for takeoff. In addition, the pressurization system's maximum differential increased to 4.0 psid, providing a sea-level cabin altitude at a flight altitude of 10,000 feet and an 8,000-foot cabin at 21,000 feet. In addition, the A90 was first to be equipped with reversible propellers that reduced landing rollout and wear on brakes while taxiing. The B90 followed in 1968 and led to introduction of the C90 in 1971.

The C90 was the first major upgrade to the King Air product line. Wingspan was increased to 50 feet, three inches, and PT6A-20A engines were installed that retained the B90's 550 shp for takeoff. Maximum gross weight rose to 9,650 pounds. Maximum cruising speed was 253 mph, and the C90 could climb to a service ceiling of 26,600 feet. A total of 507 C90s were built from 1971 until 1982 when the C90-1 entered production. The latest version of the King Air boasted a maximum differential of 5.0 psid, PT6A-21 engines, 384 gallons of useable fuel, and a maximum cruising speed of 273 mph.

Always seeking to expand the product line in an effort to appeal to a wider range of customers, in 1972 Beech Aircraft offered the Model E90 that featured 680-shp PT6A-28 engines flat-rated to 550 shp. Production of the E90 totaled 347 airplanes, with the last example built in 1981. The last Model 90 to go on sale was the F90, of which 202 were built from 1979 to 1983. Featuring a T-tail empennage similar to that installed on the flagship Model 200 Super King Air, the F90 was powered by PT6A-135 engines each developing 750 shp. Cruising speed increased to 307 mph, and four-blade propellers were installed to reduce noise in the cabin.

The F90 was the first Beechcraft to use the new multi-bus electrical system that provided automatic load shedding, five separate buses and solid-state current sensors of ground fault protection and bus isolation. In 1983, the F90-1 was introduced. It was an improved F90 featuring PT6A-135A engines installed in new pitot-type cowlings that improved air intake characteristics. Only 33 airplanes were built from 1983 to 1985. The benchmark Model 65-90 led to development of a complete line of King Air models that are still evolving more than 50 years later with no end in sight.

The great gamble taken by PWC in 1958, coupled with a key decision by Olive Ann Beech in 1961 to mate PT6A-6 engines to a Beechcraft airframe, created an icon of business aviation. As of early 2015, more than

In 1963, it was Olive Ann Beech (above with her nephew Frank Hedrick) who urged company engineers to install PT6 engines in a Queen Air airframe. More than 50 years later, King Airs continue to dominate the corporate turboprop market worldwide. (EDWARD H. PHILLIPS COLLECTION)

7,300 King Airs of all types, including commercial and military versions, have been built, and total fleet flying time has surpassed 60 million flight hours.[5] Fifty-two years after PWC shipped the first PT6 engine to Beech Aircraft Corporation, more than 54,000 versions of the powerplant are operating around the globe and have exceeded 400 million flight hours. KA

NOTES:

1. McDaniel, William H.; "*Beechcraft – Fifty Years of Excellence*;" McCormick-Armstrong Co., Inc., Publishing Division, Wichita, Kansas; Copyright, Beech Aircraft Corporation, 1982.
2. Parmerter, Robert K.: "*Beech 18 – A Civil and Military History*." Published by the Staggerwing Museum Foundation, for the Twin Beech Society, 2004. J.C. Charleson was a long-time friend of Walter and Olive Ann Beech, and was familiar with the ongoing discussions between Beech Aircraft Corporation and PWC that resulted in the NU-8F and later the Model 65-90 program.

   Beech Aircraft delivered the NU-8F to the Army Aviation Test Board, Fort Rucker, Alabama, on March 12, 1964, where it underwent six months of testing. After being retired from flying the NU-8F served as a maintenance training aid for mechanics at Fort Eustis, Virginia, until it was placed on static display at the Army Aviation Museum at Fort Rucker.
3. Sullivan, Kenneth H. and Milberry, Larry: "*Power: The Pratt & Whitney Canada Story*," Volume 1; Pratt & Whitney Corporation, 1989, 2013.
4. The pressurized fuselage had been developed in 1962 for the Model 85 *Queen Air* that became the Model 85D in 1963 and, in 1965, to introduction of the Model 88. Only four were built in 1965 followed by another 36 in 1966. Beech officials soon realized that there was no business case for continuing production of the Model 88 because of increasing demand for the *King Air*. Plans for an upgraded version, the Model A88, were cancelled and the last Model 88 was built in 1969.
5. Textron Aviation

About the Author: 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.

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BLR Aerospace Introduces New High-Performance, Low-Noise Propeller

BLR Aerospace recently introduced a new ultra-quiet, lightweight propeller system called Whisper Prop™. Designed to improve King Air comfort, performance and safety, the five-blade, carbon fiber propeller with natural composite core is manufactured by MT-Propeller of Atting, Germany.

The Whisper Prop system is certified and available for installation on King Airs individually or as a package with BLR Winglet Systems. The Winglets increase wing aspect ratio to reduce induced drag. By increasing wing efficiency, the winglets provide superior speed, climb, fuel efficiency and handling qualities.

According to the company, flight test data show that Whisper Prop provides a 30-50 percent reduction in noise, measured in dB, depending on frequency, when compared to the standard King Air 90GTx propeller. In conjunction with the BLR Winglets, the system also delivers runway length reductions up to 33 percent, as well as significant gains in useful load. Other benefits include access to shorter, local fields to reduce trip times with improved safety margins. When purchased together, the winglets and propeller come with a certified Flight Manual Supplement verifying superior performance when compared to the factory 90GTx performance manual.

For more information, go to *www.blraerospace.com*.

CenTex Aerospace Earns Required Approval for Saddle Tank Conversion STC

CenTex Aerospace announced that it has earned many required approvals for its Saddle Tank Conversion STC for more models of the King Air. The FAA approved a revised PMA adding the King Air 200 and 300 series aircraft to the original PMA for the King Air 90. The European Aviation Safety Agency (EASA) has granted approval of the CenTex Saddle Tank Conversion STC and has assigned EASA STC number 10053071. Transport Canada (TCCA) has reviewed and accepted the CenTex Saddle Tank Conversion STC for installation on Canadian-registered aircraft. And the Brazilian Civilian Aviation Authority (ANAC) is in the process of analyzing the certification data package for ANAC validation of the Saddle Tank STC. Validation is expected to be attained very soon.

The conversion was performed recently on a King Air 350 based at Kansas City, Mo. The Saddle Tanks Plus will allow the operator to conduct non-stop flights to the West Coast with NBAA reserves using Boeing wind data, eliminating a fuel stop and saving on flight time. In addition to the reduction in flight time, the increased cargo capacity in the Saddle Tanks Plus provides the added convenience to carry several standard carry-on bags, or engine and propeller covers and plugs.

You may contact CenTex Aerospace by calling (254) 752-4290 or email at *info@centex.aero*.

FAA Grants STC for Five-blade MT-Propeller on Beech King Air 350

MT-Propeller Entwicklung GmbH has received the FAA STC #SA03525NY for the next generation five-blade

scimitar composite propeller MTV-27-1-E-C-F-R(P)/CFR260-65b on the Beech King Air 300/350 series powered by Pratt & Whitney PT6A-60A engines. The installation is also EASA certified.

MT-Propeller says the new five-blade MT-Propellers provide a performance improvement of approximately eight percent in takeoff and climb and four to five knots in cruise on this aircraft type. There are no propeller speed restrictions on ground while operating in low idle. The ITTs are lower during startup for less engine wear. Also due to the smaller diameter of the five-blade construction, it has more ground clearance for less FODs. The MTV-27 Propeller has nickel alloy bonded on the leading edges for superior erosion protection of the blades. If there is FOD damage the blades are repairable.

MT-Propeller also says the natural composite blades provide best vibration damping characteristics for almost vibration-free propeller operation and significant cabin noise reduction. The propellers have no life limitation and their construction provides maximum durability and reliability; they are suitable for all weather operation.

Service Bulletins

Service Bulletin 11-4118: Placards and Markings – Inspection/Replacement of Aft Compartment Instruction Plate

Issued: May 2015

Compliance – Mandatory: An Airworthiness Directive will be requested on the matter covered by this Service Bulletin. This Service Bulletin is Mandatory and must be accomplished prior to next flight after receipt.

Effectivity:

Airplanes — Model C90GTi King Air, Serial Numbers LJ-2028 through LJ-2046, LJ-2048 through LJ-2051, and LJ-2053.

If you are no longer in possession of the airplane, please forward this information to the present owner.

Spares — P/N 101-530409-5 aft compartment instruction plates held in spares and purchased between October 21, 2011 and September 28, 2012.

Reason: This Service Bulletin is being issued to address a condition in which an incorrect aft compartment weight limitation instruction plate may have been installed on certain Model C90GTi airplanes.

Description: This Service Bulletin provides instructions to inspect for an incorrect aft compartment instruction plate and if installed, replace with a correct P/N 101-530409-5 aft compartment instruction plate. A correct P/N 101-530409-5 instruction plate for the Model C90GTi specifies a "NOT TO EXCEED" weight limit of 350 pounds. An incorrect instruction plate specifies a "NOT TO EXCEED" weight limit of 510 pounds.

Warranty: Warranty credit for labor and parts obtained from Beechcraft Corporation or Hawker Beechcraft Services, to the extent noted under MANPOWER and MATERIAL will be allowed on all airplanes meeting all the following criteria:

1) The work shall be accomplished in accordance with the criteria defined in Paragraph 1.D., COMPLIANCE.

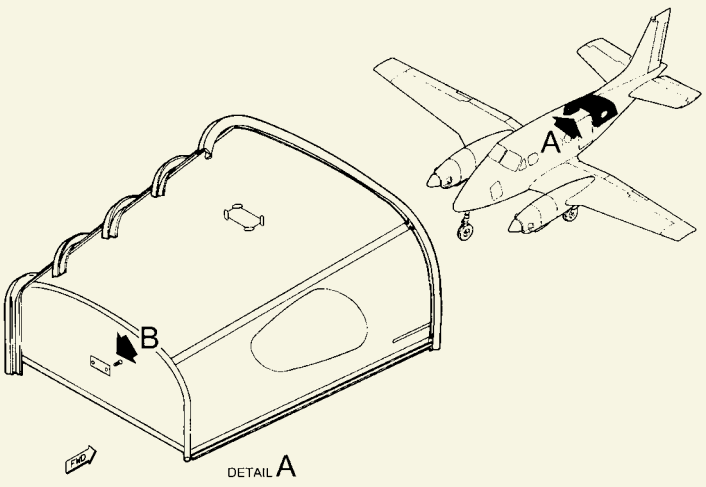
2) The work shall be accomplished in accordance with criteria defined in Paragraph 3, ACCOMPLISHMENT INSTRUCTIONS.

3) The work shall be accomplished at Hawker Beechcraft Services or an Authorized Service Center (ASC) rated to perform maintenance on the specific model of Beechcraft airplane.

4) While work shall be accomplished in accordance with the criteria defined in Paragraph 1.D, COMPLIANCE, warranty coverage offered in this Service Bulletin will expire 12 months from the last day of the month this Service Bulletin is issued. After this date, the owner/operator assumes the responsibility for compliance cost.

5) Claims for compliance with this Service Bulletin (SB) are to be filed as a W3-type claim against SB 11-4118.

6) After the Service Bulletin has been accomplished, a warranty claim must be submitted to Beechcraft Corporation within 60 days of the Service Bulletin completion date.



DETAIL A
DETAIL SHOWN IS ROTATED
180 DEGREES FROM LOCATOR VIEW

AFT COMPARTMENT
LOADING LIMITATIONS
INSTRUCTION PLATE

NOTICE
THIS COMPARTMENT CAN BE OCCUPIED DURING TAKEOFF
AND LANDING ONLY IF EQUIPPED WITH A SEAT BELT
COMPARTMENT CAPACITY
TOTAL COMPARTMENT CAPACITY (INCLUDING BAGGAGE
AND/OR PASSENGER AND/OR EQUIPMENT) NOT TO EXCEED 350 LB
SEE WEIGHT AND BALANCE SECTION OF FLIGHT
MANUAL FOR LOADING INSTRUCTIONS

DETAIL B

Beechcraft Corporation reserves the right to void continued airplane warranty coverage in the area affected by this Service Bulletin until the date the Service Bulletin is accomplished.

The owner/operator should contact Hawker Beechcraft Services or an ASC to schedule the warranty work to be accomplished. Hawker Beechcraft Services or an ASC must submit the appropriate paperwork directly to the Beechcraft Warranty Department for warranty consideration.

Manpower: The following information is for planning purposes only:

Note – No warranty coverage will be allowed for the inspection portion of this Service Bulletin.

Estimated man-hours for instruction plate inspection: 0.50 hour

Estimated man-hours for instruction plate replacement: 0.50 hour

Suggested number of technicians: 1

The above is an estimate based on experienced, properly equipped technicians complying with this Service Bulletin. Occasionally, after work has started, conditions may be found that could result in additional man-hours.

FAA Special Airworthiness Information Bulletin (SAIB)

SAIB CE-1515: Empennage – Horizontal & Vertical Stabilizer Structure

Issued: April 20, 2015

Compliance: It has been determined that the airworthiness concern is not an unsafe condition that would warrant Airworthiness Directive (AD) action under Title 14 of the Code of Federal Regulations (14 CFR) Part 39 at this time. This is information only. Recommendations aren't mandatory.

Effectivity: King Air Model F90 and King Air 200, B200, 300 and B300 series aircraft.

Background: The FAA, Wichita Aircraft Certification Office (ACO), has received reports from the Beechcraft Repair Design Office (RDO) of approximately100 repairs in the past decade to address structural corrosion of the empennage. Typically, the RDO is consulted when corrosion levels exceed repair limits governed by the standard repair manual (SRM). In the cases, Beechcraft cited that the most extreme

corrosion was experienced on the rear spar cap (or chord) of both the horizontal and vertical stabilizers. However, corrosion damage was not limited to those areas and was also discovered inside the horizontal and vertical stabilizers. Although the horizontal and vertical stabilizers were originally designed with access panels, Beechcraft has designed kits for the installation of additional access panels in order to facilitate more thorough inspections of these areas.

Beechcraft has also revised the Airworthiness Limitations Manual (ALM) of the Instructions for Continuing Airworthiness (ICA) for the affected models. The respective ALM's refer to inspections defined in the SRM for each model.

Recommendations: We recommend that the latest revision of the airworthiness limitations be incorporated for the affected airplanes. Doing so will ensure corrosion inspections for both the horizontal and vertical stabilizers are included in the maintenance program. The respective Airworthiness Limitations are included in the following documents:

1. Airworthiness Limitations Section of King Air F90 Series Maintenance Manual Part No. 109-590010-19 Revision B7, May 2014;
2. Airworthiness Limitations Manual King Air 200 Series Part No. 101-590010-453 Revision E, February 2015;
3. Airworthiness Limitations Manual King Air 300/300LW Part No. 101-590097-161 Initial Revision, May 2011;
4. Airworthiness Limitations Manual King Air B300/B300C Part No. 130-590031-211 Revision D, February 2015;

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

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