King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

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Back in the

Onshore Outsourcing relies on King Air B200 to bringing IT jobs back onshore

e U.S.A.

by MeLinda Schnyder

Photos by LG Patterson unless noted.

"The King Air, *our* King Air, is essential to revitalizing rural America," said Shane Mayes, founder and CEO of Onshore Outsourcing.

That might sound like a brazen statement but Onshore Outsourcing has the business model and results to back it up: "Our mission is squarely focused on the development of our employees. It's our aim to help people see beyond their current situation toward a better way of life, to give them hope and the kind of dignity that comes from having an honorable profession. This all translates into value for our customer because they get a fiercely dedicated and loyal workforce," Mayes said.

The customer is corporate America, companies that outsource work like business analysis and architecture, data and infrastructure management, software development, business process outsourcing and help desk administration. Instead of going offshore for those services, Onshore Outsourcing wants those companies to hire rural Americans, or what it calls the "most cost-effective and innovative workforce available in the world."

The King Air's role in Onshore Outsourcing's rural revitalization is to connect the company's information technology workers with their Fortune 500 business clients. "I literally don't think we could run this model without the airplane," said Shane Mayes, founder and CEO.

The delivery center in Macon, Mo., is set up in team-based pod structures. About 180 employees deliver business analysis and architecture, data and infrastructure management, software development, business process outsourcing and help desk administration to national clients like Schneider.

The King Air's role in this rural revitalization – for the past 15 months or so – has been to connect Onshore Outsourcing's information technology workers, who all work in rural communities, with the Fortune 500 businesses based in large metro areas.

The Perfect Example

It's a three-hour drive to St. Louis from tiny Macon, Mo., population 5,500 and home to one of Onshore's main campuses, which it calls a rural delivery center. A project with a large client based in St. Louis wasn't going well; communication had broken down between the company and the IT team. A team of six IT professionals made the quick flight on the King Air to work at the customer's site and save the project.

"We did that in a matter of hours. If you think about whom our competitors are – offshore software developers from India – they just can't do that," Mayes said. "Remember, all of our customers are in metropolitan areas and we are in rural areas. I literally don't think we could run this model without the airplane."

The Business Model

Mayes, who grew up in St. Louis, found himself in the north-central Missouri town of Kirksville when his wife was going through medical school. An IT project manager without a college degree, Mayes couldn't find that type of job in rural America. He started building websites for local businesses and when he needed more employees, he realized he would have to train them himself.

"I found these communities were full of underemployed and dislocated workers," Mayes said. "As I worked with them and taught them IT skills, I saw the challenges they were going through. We were a small team and you see what poverty does to people, and you see them overcoming life situations and chasing their dreams. I fell in love with that. That's my life's work."

In following this calling, Mayes said he accidentally created the domestic rural outsourcing industry. Onshore's own rural delivery and organic workforce development models offer a low-cost, domestic alternative to offshore outsourcing. These models allow individuals in rural areas to learn skills, obtain great jobs and continue learning and growing throughout their career. The models come together to form a service that provides IT workers customized specifically to a customer's needs, yet remaining incredibly flexible and ready to adopt new technologies.

Chief Pilot Thomas Goad, who majored in flight operations at the University of Dubuque, said he's flown Onshore's 1981 King Air B200 300 hours through its first 14 months of ownership.

"We're the only company in the rural outsourcing space that has both a build and a run side," he said. "We're able to deliver solutions and build them, and we're also able to support them with IT help desks and a pretty incredible business services offering.

Walking through the delivery center in Macon, you'll see team-based pod structures, many with the logo of their customer overhead. For example, Schneider – the national trucking and logistics company.

"These awesome people in this pod are working to support Schneider Trucking," Mayes said during a tour of the Macon campus. "Schneider has thousands of employees, thousands of truckers all with electronic devices inside the cab of the truck that keep track of virtually everything the driver needs to be doing and is doing. The guys and gals might have a problem with the device, so they call in and we help them get back on the road."

Another pod is working on taking client data that one of their biggest customers – real estate conglomerate Jones Lang Lasalle – has had for a long time and standardizing it so JLL can put it in a new, standard database for easier access for all users.

Pods working on software development sit on another floor of the building. One team is just finishing up a huge project creating software for Hudson's Bay Company and its Saks Fifth Avenue stores that will derive commissions for sales associates.

Other well-known clients include Panera, Domino's, Boeing, Enterprise Rent-a-Car and Commerce Bank.

Educating the Rural Workforce

Some of the world's biggest brands hand off their IT needs to employees sitting in rural America thanks to Mayes starting the company in February 2005. In addition to the 180 employees at the Macon Rural Delivery Center, Onshore has about 80 employees at a campus is Glenville, Ga., which is about a four-hour drive from Atlanta and has a population of roughly 5,000. There are smaller offices in Chesterfield, Mo., right outside St. Louis; and Roswell, Ga., a suburb of Atlanta. Several company sales members have offices near large metropolitan areas where some of their largest clients are located: Arizona, Minnesota, Illinois and California.

Shane Mayes, Onshore Outsourcing founder and CEO, took a group of friends to the final stop on George Strait's The Cowboy Rides Away *concert tour. They flew to Arlington, Texas, aboard the company's1981 King Air B200 that at one time was owned by Strait.* (SHANE MAYES)

About 95 percent come to Onshore with no IT training. They start with an eight-week boot camp, during which Onshore tries to remove as many barriers as possible, providing daycare and meals to families.

"The boot camps are all pre-employment training, and we're really strong at that," Mayes said. "People come out of the boot camp and we give them jobs. To continue their education, we have Hannibal-LaGrange University here at night. We pay for all of our employees to go to college for free."

They emerge data analysts, software testers, software developers and call center professionals. While employees don't sign contracts, there is little turnover. "They stay because they want to. We try to keep them happy," Mayes stated.

Onshore Outsourcing's 1981 King Air B200 is based at Kirksville Regional Airport (KIRK) because Macon-Fowler Memorial Airport (K89) doesn't have a hangar large enough. Macon, in north-central Missouri, has a population of about 5,500.

He said he expects to hire around 100 people overall this year, with a big focus on the Georgia Rural Delivery Center that opened in 2013. A third center is being considered, possibly in Texas.

The King Air

"Hey, if anyone wants to go to Chicago, I'm going there the Thursday after next," Shane called out as he walked through one of the floors. "You'll get there and back same day."

Mayes leased a Cessna 414 for several years and when he reached the point of flying 200 hours a year he knew it was time to own. The company purchased a 1978 Beechcraft Duke twin-engine piston in 2012. Onshore outgrew it, but kept it in its fleet, when it opened the second Rural Delivery Center in Georgia.

In January 2014, Onshore purchased a 1981 King Air B200, singer George Strait being one of the aircraft's past five owners.

"More people were going on the flights with us as the business grew, and we needed more speed and more range," Mayes said. "I just love the King Air. I love how it sits on the ramp, and it's just a safe, reliable airplane. The cabin size is awesome; it's just right for our needs."

Mayes also loves the payload and storage capacity, especially on personal trips. "My wife can basically get a minivan-load of stuff in there, we've got our three daughters and grandma, and we just get in and go. I don't know if there's another airplane with the luggage capacity of a King Air," he said.

The Duke operates mostly from Georgia, between Dekalb-Peachtree Airport (KPDK) and MidCoast Regional Airport (KLHW), shuttling employees between Onshore's locations and to meet with clients. The King Air is based at Kirksville Regional Airport (KIRK) because Macon-Fowler Memorial Airport (K89) doesn't have a hangar large enough.

Onshore Outsourcing supports a local early development center where many of its employees' children attend. The company invited them out to see the King Air at Macon-Fowler Memorial Airport. (SHANE MAYES)

The week we visited Mayes said was a typical week of flying. He was flying on Friday to Atlanta to meet with his advisory board. On Saturday he would fly to Kansas City for a Young Presidents' Organization with his wife and two of his daughters. He would be back in Atlanta on Monday to speak at a Chief Information Officer event and on Thursday he had a prospective client meeting in Chicago.

Future Plans

Through its first 14 months, Onshore flew the King Air B200 300 hours according to chief pilot Thomas Goad, who majored in flight operations at the University of Dubuque, then spent time as a flight trainer in his native California, a bush pilot in Alaska and flying freight based out of St. Louis until joining Onshore Outsourcing when the company acquired the King Air. "It's been rock-solid for us. We've been able to get 281 knots true airspeed out of it consistently, and the reliability has been huge."

During the first year, a typical mission for the company included three or four passengers with a 600-mile range. This year, Goad's goal is to increase the passenger load to six or seven on average by communicating the aircraft's schedule with more notice.

"As a business, we want to manage this asset efficiently, so we're tracking by seat mile cost," Mayes said. "Thomas came to me and said if we really want the most use out of this airplane, the sweet spot is full seats and up to 600 miles so that's what we're doing."

The aircraft has Garmin 530 avionics and RAM air modification that were installed prior to purchase, and the interior was reupholstered when Onshore took delivery. Mayes said future modifications could include new paint, as well as Blackhawk and G1000 upgrades. And while George Strait had a pretty nice stereo system installed, Mayes expects to upgrade the entertainment system also.

"The King Air will be around at Onshore for a long time; it's the perfect airplane for us," he said. "It allows me to live in a rural area, right in the middle of all the challenges rural America faces in a rural employment ecosystem while still running a business. I wouldn't be able to recruit to Macon, Mo., the executive team I have dispersed across the country and we wouldn't be able to get out there and sell to Fortune 500 companies or have face-to-face meetings with our customers without the King Air." KA

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Using Airline Safety Techniques in GA Operations

by Matthew McDaniel

A hearty eye-roll is often the first reaction when it is suggested that general aviation pilots should apply "airline techniques" to their operations to improve safety. First of all, GA is so multi-faceted that lumping so many types of aviation into such a catch-all term is ridiculous. How can one term encompass both FAR Part 135 charter operations in a Gulfstream and a student pilot soloing a Light Sport Aircraft (LSA) for the first time? Yet, it does! Secondly, many elements of typical airline techniques simply don't translate into some segments of general aviation. To clairify, for this discussion of airline style safety techniques within GA, we are targeting primarily turbine aircraft operations within standard, non-training, missions. Most King Air operations certainly apply.

The majority of turbine GA pilots adhere to at least some level of SOP (Standard Operating Procedures). Accordingly, within the GA accident rate, turbine operations exhibit a far lower accident and fatality rate than general aviation, as a whole. Yet, even when extracted from other segments of GA, turbine operations still continue to maintain an accident rate far higher than that of airline opeartions. While closing that gap has remained elusive on a large scale, each and every one of us can contibute to greater safety on a small scale (within our personal and business flying and/or within the operations of our non-airline company). Here are some ideas to consider applying to your King Air operations.

Pre-Flight Planning

Airlines have the luxury (and sometimes requirement) of having dispatchers, load planners, and weather specialists on their payrolls. This takes a fair amount of flight planning burden off the pilot's backs at the very beginning. While the buck always stops with the pilots, having other professionals checking weather, analyzing routes, and creating a recommended flight plan for you can be a real workload reducer. This does not have to exist only in the form of actual employees though. Today's computer technology, programs, apps, and various flight planning service companies can put all manner of pre-flight planning information right at the pilot's fingertips. Amazing websites (like FlightPlan.com©) have gained wide acceptance by turbine pilots. Equally amazing are flight planning apps/software (like ForeFlight©) that can be used on various tablet devices, giving pilots the ability to take the information with them in the cockpit and access it whenever the need arises. Apps and software exist to assit in load planning (weight and balance), fuel planning, and performance calculations. Plus, a truly dizzying array of weather websites and apps are available, from the popular Aviation Digital Data Service (ADDS) website (*www.aviationweather.gov/adds*), to ultra-specialized websites where you can analyze radar plots or various aviation weather charts/services. Using the tried and true FAA/Flight Service-approved information via Lockheed-Martin Flight Services, has become increasingly advanced since Lockheed-Martin's tenure began (*www.lockheedmartin.com/us/products/afss*). Finally, there are also a variety of flight planning/services companies that can provide bundled flight planning services nearly on par with that of a scheduled airline's dispatch team. Such companies do so as a contracted service, available via annual membership fees or on an as needed, fee for service, basis. So, while you or your company may not have the luxury of employing full time helpers, there are many ways to improve both the quality and the ease of your pre-flight planning tasks.

Pre-Flight Inspection

Airline pilots are required to perform pre-flight walk-around inspections before every flight. Sometimes that task falls exclusively upon the first officer, while some airlines have written SOPs designated the Pilot Flying (PF) or Pilot Monitoring (PM) be assigned the task. However it is incorported into your SOP, and however elementray it may seem, it is always the first brick in the safety foundation of any flight. Yet, in GA, it is often overlooked; especially when the same pilot/crew is flying multi-leg days in the same aircraft with short turn around times, or added time pressures from early-arriving passengers or approaching weather systems. As basic as it may seem, a pre-flight inspection should happen prior to every flight, without exception.

Crew Briefings

Obviously, most airline operations are conducted with a multi-person cockpit crew (two pilots being the most common in today's airline fleet). While this might not apply to all King Air operations, many King Air operators utilize a two-pilot crew, as well. This may be the case for a variety of reasons, such as insurance or company-policy requirements, Federal Aviation Regulation (FAR), Operating Specifications (OpSpecs), or Management Specifications (MSpecs) requirements for the type of operation being conducted. There's obviously a safety enhancement

that this requirement provides and sometimes a two-pilot crew is simply required because the PIC has an SIC-Required limitation on their type rating, which could be the case in King Air 300/350 (and 1900 models) if their training and type rating checkrides were conducted using an SIC. Whenever multiple pilots must interact as a team, ensuring they are always on the same page is critical to flight safety. Assuming that is the case, simply because the pilots might be old pals or commonly fly together, is a bad idea!

Airline crews generally do crew briefings several times over the course of a day and within a single flight. The intial briefing is not just an introduction, but a quick reviw of SOPs that will apply across all phases of ground and flight operations. Typical items would include:

- Statement of safety culture
- Statement of the division of duties
- Review of CRM expectations
- Flight deck communications
- Security issues and concerns
- Aircraft status, to include performance concerns, Minimum Equipment List (MEL) items, maintenance items, or anything out of the ordinary

Prior to engine start, it is common to discuss items more specific to the upcoming flight, such as:

- Weather and turbulence
- Runway/Takeoff performance
- Rejected takeoff criteria
- Flight time and any anticipated delays
- Routing, clearances, and altitudes
- Engine failure procedures specific to the airport, the runway, the expected Standard Instrument Departure (SID) or Obstacle Departure Procedure (ODP), and/or the surrounding terrian, obstructions, and airspace
- Flight and duty time issues (whether they be regulatory, company policy, or personal limitation related)

In-flight briefings go by several names and typically conincide with a similarly named checklist (Descent, Approach, In-Range, and WIRE Checklists/Briefings are all common in turbine operations). Regardless of name, they are usually conducted proir to the initial descent or (at the latest) prior to beginning the Standrad Terminal Arrival (STAR) or other arrival procedure. Typical items to review and discuss include:

- A thorough review/briefing of the arrival procedure, with special emphsis on crossing altitude restrictions, speed restrictions, and navigation system programming
- A thorough review/briefing of the approach procedures, with special emphasis on altitide minimums and courses for each phase of the approach, weather, ceiling and visiblity minimums, missed approach procedures, and navigation system requirements and programming
- Runway conditions, landing performance considerations, and airport layout for expected runway exit points and anticipated taxi routings

Alternate Airport and Performance Planning

All U.S. airlines operate not only under applicable FARs, but also under OpSpecs specific to their operations. FAR 135 and FAR 91 Subpart-K operators do this, as well. Such OpSpecs or MSpecs may be (and usually are) more restrictive than applicable FARs, but may never be less restrictive. One area covered in great detail in most OpSpecs and Mspecs is that of alternate airport minimums and requirements, to include both takeoff and landing alternates (see Figure 1). Another area covered, is that of performance calculations related to takeoff, climb, and landing. OpSpecs, Mspecs, and even the basics within FAR 135 and FAR 121, require much greater margins be added to basic performance calculations in order to ensure a safer margin for error. King Air pilots operating strictly under FAR 91 must only adhere to the applicable standard FARs. However, the stricter limits and greater redundancy built into airline operations have a direct effect on safety and the positive outcome of flights that do not end at the planned destination or which are conducted to/from performance critical airports. For this reason, FAR 91 King Air operators should strongly consider creating their own set of OpSpecs, in order to achieve the same levels of safety the airlines have proven to be effective. Many FAR 91 operators have adopted this technique by simply copying the OpSpecs of an FAR 135 or 121 operator who's flying similar equipment and/or missions. Your local FSDO would be an easy starting point for obtaining an example of such OpSpecs which you might use for reference.

Appendix A. Sample OpSpec Paragraph C055, Alternate Airport IFR Weather Minimums: 14 CFR Part 121

a. The certificate holder is authorized to derive alternate airport weather minimums from Table 1 below, according to the limitations and provisions of this operations specification.

Table 1—Alternate Airport IFR Weather Minimums

Approach Facility Configuration	Ceiling	Visibility
For airports with at least one operational navigational facility providing a straight-in non-precision approach procedure, or Category I precision approach, or, when applicable, a circling maneuver from an IAP.	Add 400 ft to MDA(H) or DA(H), as applicable.	Add 1 statute mile or 1600 m to the landing minimum.
For airports with at least two operational navigational facilities, each providing a straight-in approach procedure to different suitable runways.	Add 200 ft to higher DA(H) or MDA(H) of the two approaches used.	Add ½ sm or 800 m to the higher authorized landing minimum of the two approaches used.

☐ One useable authorized Category II ILS IAP. 300 feet and ¾ statute mile (1200 m) or RVR 4000 feet (1200 m).

☐ One useable authorized Category III ILS IAP. 200 feet and ½ statute mile (800 m) or RVR 1800 feet (550 m).

Figure 1: An example of a typical airline (FAR 121) Alternate Airport OpSpec.

Post-Flight Inspection

To be honest, most airline pilots do not perform post-flight inspections. This is because they are, more often than not, handing off the aircraft to a subsequent flight crew or to a ground maintenance crew, who will quickly launch into their own pre-flight or routine maintenance inspections. While it is rare for airline crews to simply park the plane without any sort of handoff, it is common within turbine

GA operations. In which case, post-flight inspections are important. They allow the crew to discover and handle any problems today that, left unnoticed, might cause a flight delay or cancellation tomorrow. Depending on how many pilots operate the airplane in question, you could be doing yourself or your fellow pilots a big favor by conducting a simple post-flight inspection, and initiating corrective action for any abnormalities found, before calling it a day.

Conclusion

Hopefully, it is obvious, that this is a very basic overview of airline safety techniques which can be easily applied to King Air operations. The depth of more specific information is overwhelming and is not the purpose of this article. Yet, in the end, it is usually the simpliest matters which are most often overlooked and become the first link in the accident chain. SOPs are only as good as the pilot's (or crew's) dicipline to apply them exactly as their name implies – standard! Any set of rules, guidelines, or procedure that are routinely ignored in the name of convenience or expense are effectively meaningless. In the airlines, there is a great deal of FAA oversight of pilots, mechanics, dispatchers, etc., and both the routine operations and the training/checking events that each are subjected to. Because it is impractical to impose such levels of oversight on all operators of turbine aircraft, the burden of such oversight rests on the owners and operators themselves. While we may be policing ourselves out there for the most part, that should not relax us. Instead, it should encourage us to be even more vigilant and to seek ideas for safer operations from any avenue that has proven itself to be high-achieveing in that regard. KA

About the Author: Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI & IGI. In 25 years of flying, he has logged nearly 15,000 hours total, over 5,500 hours of instruction-given, and over 2,500 hours in the King Air and BE-1900. As owner of Progressive Aviation Services, LLC, (*www.progaviation.com*), he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he also flies the Airbus A-320 series for an international airline and holds six turbine aircraft type-ratings. Matt is one of less than three dozen instructors in the world to have earned the "Master Certified Flight Instructor" designation for six consecutive two-year terms. Mr. McDaniel can be contacted at (414) 339-4990 or *matt@progaviation.com*.

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RAISBECK ENGINEERING

The Yellow Arc on the Fuel Quantity Gauges

by Tom Clements

Almost all King Airs with capacitance-type fuel quantity indicators have the zero to 265 pounds range painted in yellow. The POH states, "Do not takeoff if fuel quantity gauges indicate in the yellow arc or if fuel quantity is less than 265 pounds in each wing system." I know that a lot of King Air pilots think this comes from concern about a tank "un-porting" under certain conditions, causing air, not fuel, to reach the engine and leading to an engine failure. No, that is not the concern here.

In fact, the concern has nothing whatsoever to do with the physical or the engineering aspects of the system. Instead, it comes from Beech's legal team. The attorneys want to be able to tell the jury, "See?! We told the pilot not to take off with so little fuel! It's his disregard of this limitation that caused the fuel exhaustion and crash, not our system!"

Whether we are talking about a C90 or a King Air 350 model, the same 265 pounds yellow arc is used, so the quantity does not relate to actual fuel consumption rates but instead is a general "catch-all" amount. It can and does equate to more than 30 minutes of flight at Maximum Cruise Power in a C90, but less than 30 minutes even at Maximum Range Power at low altitude in a 350.

By its very nature, the nacelle fuel tank – where the fuel that gets sent to an engine originates – is a fairly tall, slab-sided, tank that would be unlikely to experience fuel pick-up problems at various unusual attitudes. Yet it is even "safer" than we think, since the main wheel well intrudes onto the lower, aft, portion of this tank. This makes the bottom of the tank exceedingly narrow and steep-sided with the chance of fuel sloshing away from the sump very unlikely.

We can sometimes be totally legal for a day VFR flight, even though we allow the fuel quantity to drop into the yellow arc at the end of the flight since we have a reasonable 30-minute reserve.

On the models that do not have a "Total" reading on the fuel quantity gauges – where the pilot must add Main and Aux quantities together to reach the total – the yellow arc has yellow lettering nearby that reads "Main Tank Only." These three words are telling us that it is okay if the Aux tank quantity reads in the yellow since we rarely have a significant amount of fuel in the Aux tanks unless the Main tanks are full or close to full. In other words, the yellow arc applies to the Main tank quantity only.

Since we are discussing low fuel quantity, I want to also present an item on my King Air "wish list:"

I wish all King Air models had some low-fuel-level advisory system that is independent of the normal fuel quantity gauges. Only the 300-series – the 300 and the 350 models – have this desirable backup. In those models, there is an optical sensor that illuminates a Caution annunciator when approximately 300 pounds remain in the main tank system. For all the other King Air models, unfortunately, the quantity gauges are the only indication we have. If and when they are malfunctioning, we are left with confusion as to the actual state of FOB (Fuel Onboard).

Do you remember how to convert pounds of Jet-A into gallons in your head? Like 265 pounds is the same as 40 gallons. Just add half the fuel to itself and divide by ten, so 265 + 132.5 = 397.5 and 397.5 ÷ 10 = 39.75 which equals about 40 gallons. Of course, it is really unnecessary to use this degree of precision. Instead, using just two significant digits is fine: 26 + 13 = 39 (the 26 from 265 and 13 from 132.5). For another example, are you burning 560 pph in cruise today? That is (56 + 28) 84 gph. 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.

Pratt & Whitney Canada and the PT6 PART ONE

The revolutionary PT6 gas turbine engine nearly died during development, yet managed to survive its detractors, cost overruns and a dearth of orders to become one of the most successful turboprop engines in the history of business aviation.

by Edward H. Phillips

Old pilots and antique airplane enthusiasts never tire of watching a "round engine" start up, belch a few clouds of smoke, spit out a momentary flash of flame, and then settle into a loping idle whose unique sound cannot be matched by any other piston powerplant. That type of engine (to be technically correct, the static, air-cooled radial engine as opposed to the dynamic radial or rotary), ruled the skies over America from the late 1920s until the early 1960s.

The nearly simultaneous development of gas turbine powerplants by Sir Frank Whittle in England and Hans von Ohain in Germany before the outbreak of World War II, eventually resulted in the introduction of jet-powered fighters such as the Messerschmitt Me-262 and Gloster Meteor (the only Allied jet fighter to enter operational service in the war). By the late 1940s, the jet engine was the way of the future for the military, and to a lesser degree, the commercial aircraft industry.

It was, however, a different story for the postwar business aviation market in the United States, where the reciprocating piston powerplant (in both radial and opposed cylinder configurations) still reigned supreme. Beech Aircraft Corporation, which had staked its reputation on all-metal monoplanes powered by various static radial engines, developed an array of new airframe designs well into the 1950s that continued to rely on piston engines. During that time, however, the Wichita, Kansas-based company did briefly market the French-built, turbojet-powered MS760 business jet, but it was ahead of its time and the program was eventually terminated.

A chief obstacle to the introduction of early turbine engines into the business aviation segment was three-fold: The powerplants were expensive to manufacture, expensive to operate and expensive to maintain and repair. The military and airlines had the money to deal with these issues, but the general aviation industry did not.

Beginning in 1932, Beechcraft airplanes featured static, air-cooled radial engines such as the Pratt & Whitney R-985 that powered the postwar Model G17S. The nine-cylinder powerplant was rated at 450 horsepower. The reciprocating piston engine had dominated the business aviation segment for more than 40 years, but by 1960 the tide was turning in favor of new, gas turbine technology. (TEXTRON AVIATION)

During World War II, Beech Aircraft Corporation built thousands of twin-engine Model 18 monoplanes, including the C45 illustrated here, that were used worldwide by United States and Allied air forces. In 1946, the company introduced a postwar upgrade of the Model 18 designated the D18S that set a new standard for business aircraft. (TEXTRON AVIATION)

In 1956, Pratt & Whitney Canada (PWC), based in Longueuil, Quebec Province, began to pull together a design team of specialists with the goal of developing a small, compact, lightweight and powerful gas turbine engine. To determine if demand for such an engine existed or could be created, teams were dispatched to the major manufacturers of general aviation aircraft in the United States, namely Beech Aircraft Corporation, Cessna Aircraft Company and Piper Aircraft Corporation. The chief question that these teams had to answer was simple: Was there a market, and more importantly, a *sustainable* market, for such an engine?

There was, however, some tough competition already hard at work, including General Motor's Allison Division that was developing a gas turbine in the 250 shaft-horsepower (shp) range, and Great Britain's Rolls-Royce with its 2,000-shp Dart. After assessing results of the marketing surveys, PWC officials Kenneth Sullivan and Elvie Smith recommended that the company proceed with development of a gas turbine generating 450 shp with growth potential to 500 shp. A critical goal of the program would be keeping operating costs on a level with piston engines of equivalent horsepower [it is interesting to note that the new engine would boast the same horsepower as the nine-cylinder R-985 radial that powered last-generation versions of the Beechcraft Model 18]. In addition, PWC's engine would be ideally suited for small, single- and twin-engine airplanes such as the Model 18, de Havilland Beaver and Otter.

The next step was deciding what type of gas turbine PWC should build. Among the chief considerations were weight, overall dimensions, maintainability and specific fuel consumption. After weighing all the options available, the design team settled on a free turbine configuration. Their reasoning was as follows: "On the fixed-shaft engine, the gas generator and power turbine share a common shaft. On the free turbine, there are two units, one driving the compressor and one producing the power. The link between the two is not mechanical but is made by the flow of hot gases through the engine. The free turbine is more complex, hence costlier, but has such advantages as requiring less starting power and simpler fuel controls. The free turbine eliminates clutch requirements in a helicopter and makes easier the pairing of engines for more powerful installations. Fixed-wing aircraft could use an off-the-shelf propeller with a free turbine instead of a costly, tailor-made one required by a fixed-shaft engine." [1]

Although an engine design had been chosen, one major obstacle remained: selling the program to parent company Pratt & Whitney Aircraft in Hartford, Conn. A special team of engineers traveled there in December 1958 and presented their concept to the company's chief engineer, Wright Parkins. He carefully examined PWC's design as well as one proposed by a team from Hartford. In the end, he chose PWC.[2]

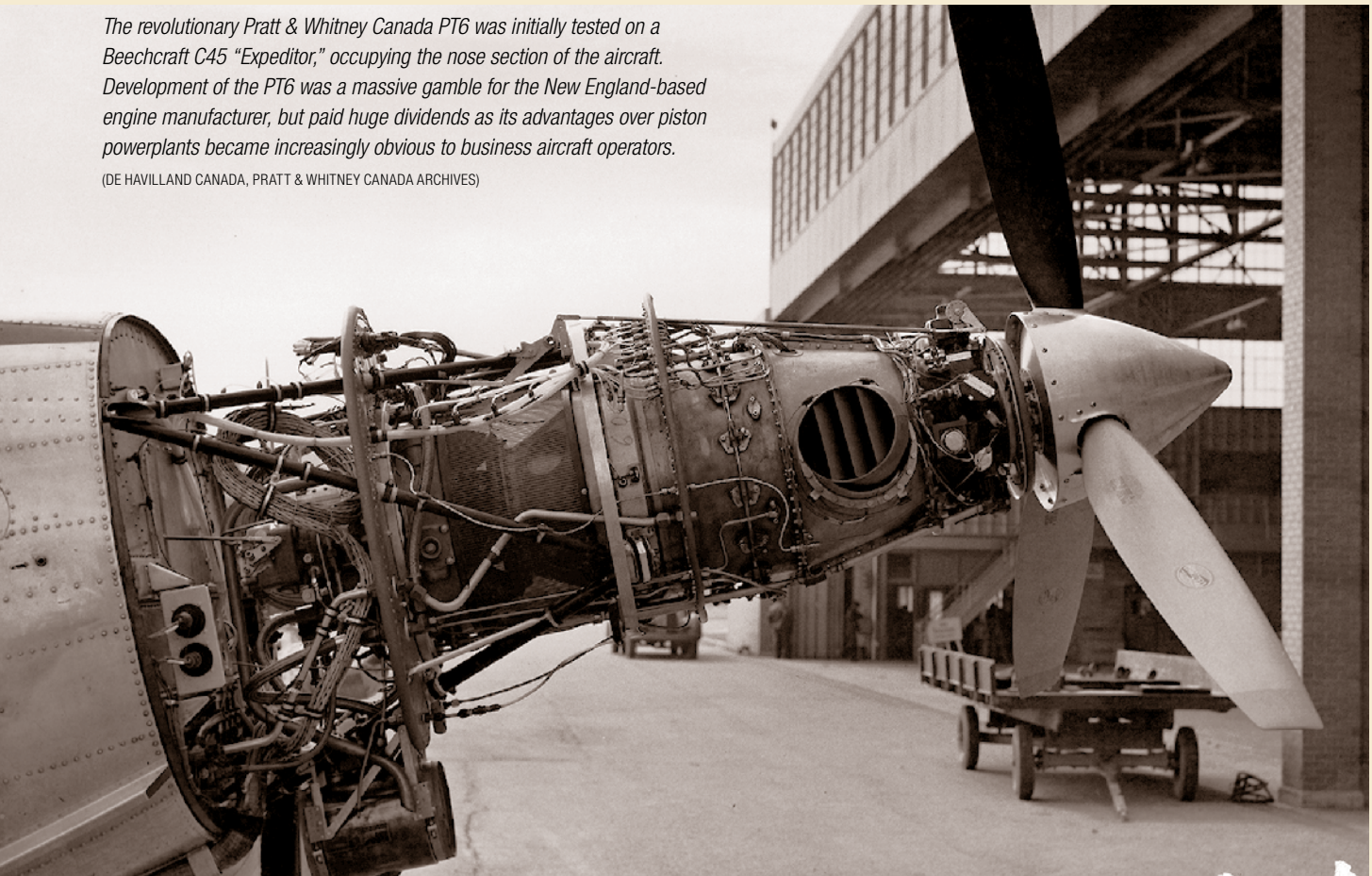
Flushed with success, high hopes and a lot of determination, the team returned to Longueuil and set to work. Although they had plenty of enthusiasm, members of the team lacked experience working together on a major project that could make or break the company's future. One member recalled that, "We had no history, no experience as a team. This was a far cry from what would happen in a mature organization with a long history of design." The lack of history and experience, however, proved to be highly advantageous because "we were uninhibited … and had no past failures."[3]

Unfortunately, as time went by the team's lack of gas turbine engine design experience began to taint the balance sheets a dark red. Costs were too high and a host of tough technical problems plagued development. Still, Wright Parkins, who was closely monitoring the work at Longueuil, believed in the engine and sent a group of engineers from Hartford to help resolve issues and put the program back on track. The six-man group arrived early in 1961 and was led by Bruce Torrell, a highly respected engineer who also happened to hail from Winnipeg, Manitoba. He had worked on engines with Canada's National Research Council and spent time with Sir Frank Whittle's Power Jets before joining Pratt & Whitney after the war. It would not be an exaggeration to state that without Bruce Torrell, the PT6 may have died an early death.

By the late 1950s, the cabin-class Beechcraft Model 65 Queen Air had replaced the Model 18 as the company's flagship business aircraft. Featuring a larger cabin, improved performance and economy of operation, the Queen Air was built in a number of versions that kept pace with the competition and the changing demands of corporate flight departments.
(EDWARD H. PHILLIPS COLLECTION)

"We learned how to develop engines from Torrell," a PWC colleague recalled, emphasizing that Torrell kept a tight rein on the project. He quickly abandoned the "one-shift-a day" agenda and replaced it with a round-the-clock work schedule to accelerate testing. "When he was in town," another engineer remembered, "he could be found in the plant at all hours. He was known to show up in the middle of the night wearing a raincoat over his pajamas."[4]

In the wake of Torrell's arrival, progress was being made but development work also faced serious opposition from, much to the team's surprise and dismay, within PWC itself. Thor Stephenson, who served as president of the company from 1959-1975, said, "The early days of the PT6 program were not encouraging, technically or sales-wise." He recalled that James Young, Pratt & Whitney Canada founder, accompanied by his friend on the board, Hubert Welsford, traveled to Hartford to see Jack Horner, chairman of Pratt & Whitney Aircraft Company, Limited. The two men argued not only for termination of the PT6 effort, but for Pratt & Whitney to transform PWC into a strictly sales and service organization, not an engine manufacturer. Horner rejected their pleas and development of the PT6 continued.[5]



The revolutionary Pratt & Whitney Canada PT6 was initially tested on a Beechcraft C45 "Expeditor," occupying the nose section of the aircraft. Development of the PT6 was a massive gamble for the New England-based engine manufacturer, but paid huge dividends as its advantages over piston powerplants became increasingly obvious to business aircraft operators.
(DE HAVILLAND CANADA, PRATT & WHITNEY CANADA ARCHIVES)

By 1961, the engine was ready for flight testing. The first aircraft to fly solely under PT6 power was not an airplane but a helicopter, specifically the Hiller Ten99 that flew in July of that year. Meanwhile, back in Longueuil, PWC began searching for a twin-engine, flight test airplane that would be suitable for the PT6. The venerable Douglas DC-3 topped the list of potential candidates, but installing the powerplant in the nose section would require extensive structural modifications and the attendant stress analysis could prove difficult and expensive. The DC-3 was off the list.

Fortunately, PWC was able to obtain a Beechcraft C-45 "Expeditor" on loan from the Royal Canadian Air Force. The C-45 was flown to Downsview, Ontario, where de Havilland aircraft engineers and mechanics completed an extensive conversion of the nose section to accept installation of a pre-production prototype engine, which weighed only 270 pounds. Ground testing of the installation began early in 1961 and continued until May 30, when de Havilland test pilot Bob Fowler and PWC pilot John MacNeil took the C-45 aloft for its maiden flight. Although the Beechcraft flew well, it did exhibit minor instability that was solved by installing 23 pounds of ballast in the cabin.

After initial handling qualities and systems checks were deemed satisfactory, a rigorous test program began that focused on specific fuel consumption, propeller constant-speed operation and feathering; air starts along with noise and vibration surveys. During one flight, MacNeil climbed the C-45 up to 26,000 feet, much to the surprise of air traffic controllers unaccustomed to tracking a small, piston-powered airplane at that lofty altitude.

MacNeil later recalled that the modified C-45 was not the most pleasant airplane to fly. According to a report he filed in September 1961, the Expeditor "…is very unstable longitudinally, particularly at higher altitudes. It also has a rolling tendency about the longitudinal axis when high [power settings] are selected on all three engines…Care must exercised at all times to be mindful of its shortcomings." MacNeil went on to state that he was "pleased with our engine operation," and that "it starts quickly, both in the air and on the ground, and makes its thrust very obvious from the surface to 25,000 feet."

One phase of the flight testing involved applying reverse thrust in flight, which MacNeil described as being "quite interesting" because the airplane "is rather unstable in that configuration and "suffers from elevator buffet." Eventually, applying reverse thrust in flight was discontinued because of concerns about elevator buffeting and the potential for flutter of the control surfaces. Another important aspect of the test program was cold weather operation, and the icy winter of 1963 afforded PWC an excellent opportunity to test the PT6 under severe conditions. The airplane was flown from Montreal, where the OAT was +38 degrees Fahrenheit, to Knob Lake in

Left-side view of the first PT6 to be tested in flight, as installed on a Beechcraft C45 borrowed from the Royal Canadian Air Force. The conversion was accomplished by De Havilland Canada.

(DE HAVILLAND CANADA, PRATT & WHITNEY CANADA)

northern Quebec province where the OAT had plunged to a frigid -21 degrees Fahrenheit.

Although the winter at Knob Lake promised to provide temperatures below -45 degrees Fahrenheit, that phase of the program was cut short when the C-45 was dispatched by PWC to the United States. The purpose of the diversion was to demonstrate the airplane and its PT6 to the military as a potential airborne counter-insurgency platform. MacNeil and flight test engineer John Hunt flew 45 hours of demonstration flights. One concern expressed by customers was whether the free-turbine design of the engine would provide adequate drag during steep descents to landing. Demonstrations allayed any concerns customers had, but MacNeil reported to PWC that he was not satisfied with a brief hesitation that persisted when propeller reversing was selected. [6]

Investigation revealed the problem – the propeller reduction gearbox (RGB) was overheating and close to seizing entirely. Another RGB was sent from Canada, but again the same problem surfaced. Finally, disassembly and close examination of the unit showed that during reverse operation, when the gas generator was turning at a low RPM, the reversing system was demanding more oil than the engine's lubrication pumps could provide. The problem was resolved by increasing the size of the pumps, relocating their position on the engine case, and installing a diverter valve.

Despite successful engine development and flight test programs, by early 1963 the future of the PT6 was still uncertain. The key issue was millions of dollars that had been spent to bring the engine to fruition, coupled with zero orders from any major airframe manufacturer. In addition, the competition was heating up. Garrett Air Research had a small gas turbine, dubbed the TPE 335, under development that packed

To test pre-production PT6 engines, Pratt & Whitney Canada (PWC) obtained a Beechcraft C-45 on loan from the Royal Canadian Air Force. Modifications were accomplished by de Havilland Canada. The PT6A powerplant weighed 270 pounds and required ballast in the cabin to improve longitudinal stability. During its 20-year service with PWC, the unique test bed flew more than 700 flights totaling 1,068 hours evaluating a wide variety of PT6A engines. The airplane was retired in 1980. (ROBERT K. PARMERTER)

a lot of punch for its size and weight. If PWC shelved the PT6, "that would be the end of it," said one senior company official. Undaunted and determined to save the PT6, PWC president Thor Stephenson went to Hartford and strongly defended the program. Ultimately, PWC's decision to keep or kill the PT6 lay with one company: Beech Aircraft Corporation. KA

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.

NOTES:

The author expresses his thanks to Kathy Roberge of Pratt & Whitney Canada, for her kind assistance in the preparation of this article.

1. Sullivan, Mark; "*Dependable Engines – The Story of Pratt & Whitney*;" American Institute of Aeronautics and Astronautics, Reston, Va.; 2008.
2. Ibid
3. Ibid
4. Ibid. In 1971, Bruce Torrell became president of Pratt & Whitney.
5. Ibid. In December 1962, Pratt & Whitney Aircraft Company, Limited, was renamed United Aircraft of Canada, Limited, to more clearly express the diverse interests of parent company, United Aircraft Corporation.
6. According to Robert K. Parmerter, PWC bought the C-45 from the Royal Canadian Air Force in 1971, when it was refurbished and registered CF-ZWY-X. It was used to test many versions of the PT6 and last flew in June 1980 after flying 719 test flights that totaled more than 1,000 flight hours. The airplane was converted to its original twin-engine configuration and donated to the Ecole Nationale d'Aeronautique, an aviation trade school, located in St. Hubert, Quebec.

You Gotta Have Heart

by Dr. Jerrold Seckler

The heart is a muscular organ located in the chest whose purpose is to pump blood throughout the body. It consists of four chambers – two atria and two ventricles. The right atrium receives blood from the body and pushes it into the right ventricle, which then pumps the blood to the lungs where it is oxygenated. The blood returns to the heart via the left atrium, and then goes into the left ventricle, which is the chamber that pumps blood throughout the rest of the body.

Like all organs, the heart requires oxygen to function and it has its own circulation provided by the coronary arteries. The coronary arteries arise from the aorta (the main artery leading from the heart) just after its junction with the heart. There are two primary coronary arteries, the left and the right. The right coronary artery supplies blood to the right atrium and ventricle as well as a small portion of the left ventricle. The left coronary artery branches into two smaller arteries, the left anterior descending coronary artery (LAD) and the circumflex artery. These arteries supply the left atrium and the bulk of the left ventricle, the heart's main pump.

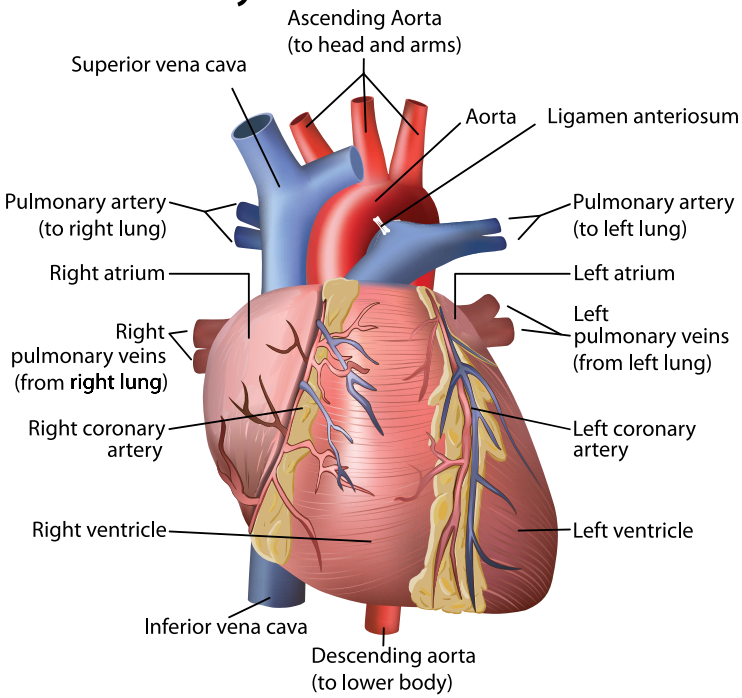
As we age, fat deposits on the walls of these arteries (the process begins in the teens) and as the process continues, other substances in the blood, including calcium and proteins, stick to the fat and form what's called a plaque. These plaques narrow the diameter of the artery, restricting blood flow. Eventually the plaque "cracks" and serves as a nidus for a blood clot to form. These clots can further impede the blood flow causing the heart muscle to become ischemic (deprived of oxygen).

Cardiac ischemia causes chest pain, especially with exertion (angina), shortness of breath, palpitations, nausea, sweating and a feeling of weakness. The chest pain is usually described as a heavy pressure and may radiate into the left shoulder and down the left arm. With rest, angina may subside, but if the degree of ischemia is sufficient, some heart muscle may infarct (die due to lack of oxygen). That's the classic "heart attack" or myocardial infarction.

While there is certainly a genetic predisposition to developing coronary artery disease (CAD), the progression of the condition is lifestyle related. You can minimize the risk of developing CAD by exercising regularly and maintaining your weight at an optimum level. For many years, health authorities advised eating a diet low in fat, but this is now being questioned. In fact, some researchers believe that many people responded to the low fat guidelines by replacing some of the fat in their diets with carbohydrates. That may have led to the increase in obesity and diabetes we've seen over the last 30 years. Both diabetes and obesity are risk factors for CAD. Until the role of diet is clearly understood, it's best for persons to maintain a normal weight and normal blood lipid levels (cholesterol, high and low density lipoproteins and triglycerides).

Clearly coronary artery disease is of concern to the FAA. Myocardial infarction (MI) can result in sudden incapacitation or even death. If a pilot has symptoms of, or has been diagnosed with coronary artery disease, he

Anatomy of the Human Heart



must ground himself immediately. FAR 61.53 states that no person who holds a medical certificate … may act as pilot in command, or in any other capacity as a required pilot flight crewmember, while that person: 1) Knows or has reason to know of any medical condition that would make the person unable to meet the requirements for the medical certificate for the pilot operation. FAR 67 states that any history or clinical diagnosis of myocardial infarction, angina, or coronary artery disease that has required treatment, or, if untreated, that has been symptomatic or clinically significant are disqualifying conditions. Therefore, any pilot with a history or symptoms of coronary artery disease may not fly unless he is specifically allowed to by the FAA Special Issuance procedures.

If one is diagnosed with coronary artery disease or has an actual MI, there is a waiting period before the FAA will even consider a Special Issuance. That waiting period varies from three to six months, depending on whether the patient received any invasive treatment (coronary bypass surgery, percutaneous stenting), and whether the affected artery was the right or left coronary. Any surgical or stenting procedures involving the left coronary artery requires the six month wait.

Once the waiting period has elapsed, the applicant can go to his AME and have an exam. The AME will defer issuance to the FAA Aeromedical Certification Branch in Oklahoma City. The FAA will want considerable documentation including all reports from your treating physician, a GXT (graded exercise test), blood lipid levels, medications, and cardiac catheterization. There are additional requirements if one wants a Special Issuance for a First or Second Class medical. The requirements are strict and complex and I would strongly recommend discussing them with your AME before deciding whether you want to proceed with the Special Issuance process.

Once a Special Issuance is issued, renewals can be done by the AME directly, although the airman will need a full status report and maximal GXT at the time of each renewal.

If you apply for a medical and are told a Special Issuance is needed, you MUST follow through and obtain it or your medical will be denied. KA

About the Author: Dr. Jerrold Seckler has recently retired after practicing medicine (urology) for over 40 years and as an active AME for 25 years. He has over 6,000 total hours, 2,200 of those in his 2001 Cirrus SR22. He is an ATP, CFII, former COPA Board Member and a ground instructor at CPPPs.

The items discussed in this column are related to experiences by Dr. Seckler in his many years as an AME, and made hypothetical for the article. Any information given is general in nature and does not constitute medical advice.

New Textron Aviation Paris Service Center Now Open

Textron Aviation Inc. celebrated the opening of its larger, state-of-the-art Paris Service Center at Paris-Le Bourget Airport, boasting complete maintenance and repair capability for Citation business jets and Beechcraft King Air turboprops.

According to the company, the new facility is three times larger than the original – 156,000 square-feet, including a 42,000 square-foot service bay – and offers faster service, easier facility access, and first-class customer areas.

The new center is one of six company-owned Textron Aviation service centers in Europe. The Paris facility also offers a mobile service solution allowing customers to receive service at their aircraft's location. All six Textron Aviation European service centers hold European Aviation Safety Agency (EASA) certification as a Continuing Airworthiness Management Organization (CAMO).

Garmin Announces Enhancements for G1000 and G500/G600 Glass Flight Display Systems

G1000 Software Upgrade for King Air C90 Aircraft

Garmin has announced new capabilities and enhanced operational benefits for the King Air C90 aircraft, which are made available through the latest software upgrade. This latest update offers new features including, NextGen components such as Automatic Dependent Surveillance-Broadcast (ADS-B) compliance, user-defined holding patterns and the approval of optional equipment, which expands global operational capability.

New enhancements offer King Air C90 owners and operators the opportunity to prepare for the demands brought on by NextGen. These options ensure aircraft meet industry requirements while expanding capabilities to allow for greater flexibility and improved situational awareness.

These new features include:

- Barometric Vertical Navigation (Baro-VNAV) approach capability
- ADS-B Out Compliance
- Area Navigation (RNAV) capability that includes the ability to fly procedures with Radiusto-Fix (RF) segments

As part of the latest upgrade, pilots now have the flexibility to conveniently build user-defined holding patterns. These holds may be created over an existing fix in the navigation database or over a user-defined waypoint. Additionally, for operators conducting SAR missions, the G1000 can automatically generate flight plans for three search patterns: Parallel Line Search, Expanding Square and Sector Search patterns. SAR is available as an option and aids in crew situational awareness during these critical missions.

Optional equipment upgrades are now available for operators who pursue the latest software upgrade. The industry leading GWX 70 solid state radar offers significant improvements in capability, reliability and cost of ownership, compared to earlier generation magnetron-based weather radar systems. The GRS 7800 Attitude Heading and Reference System (AHRS) is also available as an optional equipment upgrade. The GRS 7800 enables free-gyro mode, greatly expanding the authorized area of operation up to North 84 degrees latitude.

For King Air C90 operators, the latest G1000 software update is available immediately from select Garmin Authorized Dealers as a free upgrade (installation charges may apply). For additional information regarding the G1000 upgrade for the King Air series, contact Scott Frye at (913) 440-2412.

Enhancements to New and Existing G500 and G600 Glass Flight Display Systems

Garmin also announced enhanced capability and an expanded feature set for the G500/G600 glass flight display systems. Pilots will experience a faster, more responsive and modernized mapping display, complete with a number of enhancements that bring new capabilities to these flight displays. In addition to a new, vibrant presentation, this update provides support for the display of advanced Automatic Dependent Surveillance-Broadcast (ADS-B) traffic and weather with the GDL® 88, geo-referenced FliteCharts®, a number of weather upgrades such as WX 500 Stormscope® support, Canadian weather and more. Approval by the European

An example of the Geo-referenced Garmin FliteCharts on a G600 Flight Display System.

Aviation Safety Agency (EASA) further extends the validation of this certification to also include hundreds of makes and models of European-registered general aviation aircraft.

Enhanced Map and Display Functionality

Newly improved dynamic maps expand upon the existing rich and vibrant mapping display capabilities within the G500/G600 glass flight display system. Expertise leveraged from incorporating dynamic maps within the GTN™ 650/750 touchscreen avionics series is integrated into the G500/G600, resulting in vivid and superior display quality. In addition to the newly enhanced display capabilities, Geo-referenced Garmin FliteCharts terminal approach procedures add an elevated level of situational awareness. When flying an Instrument Approach Procedure (IAP), a magenta aircraft icon is overlaid on the approach plate so pilots can easily identify their location relative to the approach.

WireAware incorporates wire-strike avoidance technology to graphically overlay power line locations and altitude information on the moving map. Altitude is displayed in mean sea level (MSL) and above ground level (AGL), so power lines are easier to identify relative to the aircraft flight path. For added protection, Terrain Awareness and Warning System (TAWS) alerting is also available to provide visual and aural alerting.

Smart Airspace integration makes it easier for pilots to identify what airspace lies ahead. This feature conveniently highlights the airspace nearest to the aircraft's current altitude and de-emphasizes non-pertinent airspace so pilots can quickly distinguish their location to the relevant airspace around them. Additionally, newly incorporated airspace altitude overlays are depicted on the moving map and reduce pilot workload, particularly in congested airspace.

Advanced ADS-B Integration

Garmin brings Vantage ADS-B integration to the G500/G600 with the optional GDL 88 ADS-B datalink, offering pilots the opportunity to display safety enhancing ADS-B traffic and subscription-free Flight Information Service-Broadcast (FIS-B) weather on these flight displays. TerminalTraffic™ provides pilots with a comprehensive picture of ADS-B-equipped aircraft and ground vehicles in the airport environment. ADS-B-equipped aircraft in-flight are easily distinguished from ground vehicles and taxiing aircraft, which are displayed using distinct colors and symbols. Enhancing the traffic display, TargetTrend™ relative motion technology helps pilots visualize the trend of traffic as it relates to their aircraft, while innovative dual-link technology provides pilots with the most comprehensive ADS-B traffic picture available in the industry. For

customers with synthetic vision technology (SVT™) enabled, traffic targets are also displayed on the PFD. Additionally, weather is easily accessible on the MFD of the G500/G600, displaying weather products such as NEXRAD radar, METARs, TAFs, winds and temperatures aloft, AIRMETs, SIGMETs, PIREPs, as well as datalink TFRs, NOTAMs and SUA status information. By incorporating the GDL 88 ADS-B datalink, aircraft owners are provided a simple, rule-compliant ADS-B Out solution when operating in the U.S. below 18,000 feet, while receiving the safety benefits of ADS-B In traffic and weather.

Enhanced Weather Support and Compatibility

New weather enhancements offer pilots access to optional weather products for display on the G500/G600 and provide expanded compatibility for additional weather radar systems. These new compatibilities include GWX™ 70 adds optional ground clutter suppression and turbulence detection; GWX 68/GWX 70 enhances existing support for multiple G500/G600 flight displays and GTN touchscreen avionics; GDL 69® adds support for advanced weather products, such as icing, turbulence, PIREPs and Canadian weather and WX-500 Stormscope® support.

The new features and capabilities for the G500/G600 are available today for new installations or as a free software upgrade with a qualifying ADS-B purchase for existing customers from a Garmin Authorized Dealer (installation charges may apply). This software upgrade is supported by Garmin's award-winning aviation product support team, which provides 24/7 worldwide technical and warranty support. For additional information, visit *www.garmin.com/aviation*.

King Air

King Air Technically...

RECENT SERVICE BULLETINS, ADVISORY DIRECTIVES AND SAFETY COMMUNICATIONS

From Model Communiqué # KA-2015-02 issued in March 2015:

ATA 00 – General

Textron Aviation has released the first edition of its new Customer Service magazine – the *Direct Approach!* Download the magazine to get the latest technical news, read about other Textron Aviation customers, and discover which product upgrades are available for your model. The two versions, one for jet and one for piston/turboprop models, can be found on its Customer Service website *www.TxtavSupport.com*.

The Service organization is also introducing a new app for mobile devices, which provides customers with key information they need for service and support of their aircraft. The free app is available on iTunes® (for iPhone/iPad devices) or Google Play® (for Android devices).

With this app, users can:

- Locate nearby Hawker, Beechcraft and Cessna Service Centers and Mobile Service Units
- Locate nearby Support and Sales representatives
- Get quick access to Product Support teams and Parts and Programs personnel
- Directly call or email with one click

From Model Communiqué # KA-2015-03 issued in April 2015:

ATA 00 - General - Technology Briefings

All

Textron Aviation (TA) has introduced a new page on the Beechcraft web site at *www.beechcraft.com/customer_support/* entitled "Technology Briefings (NextGen)". These technology briefings address the TA position and provide status information on upcoming global NextGen-related mandates. The content of each briefing provides TA customers with Definitions, Background Information, Key Benefits, Equipment Requirements, Regulatory Status, Compliance Status of TA models, and resource links with respect to an individual subject.

The following technology briefings have been added to the new webpage:

- Automatic Dependent Surveillance – Broadcast Out (ADS-B Out)
- Link 2000+ CPDLC (Europe)

- FANS 1/A in the North Atlantic Region
- SBAS GPS Receivers and ADS-B Out Capability
- Space Based Augmentation Systems (SBAS) and Localizer Performance with Vertical Guidance (LPV) Approach Capability
- TCAS II Version 7.1 (ACAS II Version 7.1)
- Flight Data Recorders and International Operations

In the near future, TA will add a technology briefing to address Performance Based Navigation.

As required, updates will be periodically loaded onto the website when available. TA continues to develop and add technology briefings as new technology requirements are identified and become the topic of frequent discussions.

For questions or comments regarding this information, contact Technical Support at 1 (800) 429-5372 or 1 (316) 676-3140.

Service Bulletins

There have been no Service Bulletins issued since the last issue of *King Air* magazine.

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