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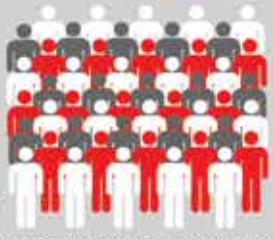

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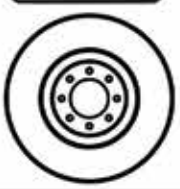

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NOVEMBER 2016 Volume 10 / Number 11

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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 1810, Traverse City, MI 49685, or by calling 1-800-447-7367. Rates for one year, 12 issues: United States $15.00, Canada $24.00 (U.S. funds), all other foreign $52.00 (U.S. funds). Single copies: United States $4.50, Canada/Foreign $6.50.

COVER PHOTO
Photo courtesy of
Jay Vierling

Contents

King Air (ISSN 1938-9361), USPS 16694 is published monthly by Village Press, Inc., 2779 Aero Park Drive, Traverse City, Michigan 49686. Periodicals Postage Paid at Traverse City, MI. POSTMASTER: Send address changes to King Air, Village Press Inc., P.O. Box 1810, Traverse City, MI 49685. Telephone (231) 946-3712. Printed in the United States of America.

ADVERTISING: Advertising in *King Air* does not necessarily imply endorsement. Queries, questions, and requests for media kits should be directed to the Advertising Director, King Air, P.O. Box 1810, Traverse City, Michigan 49685. Telephone 1-800-773-7798.

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Unconventio

King Air Owner Makes His Way in

by Kim Blonigen

Jay Vierling's 2002 King Air C90B which he uses as the ultimate business tool.

The memorable runway (the small black strip in the lower part of the photo) at Greenland's Narsarsuaq Airport (BGBW) where Vierling made his second landing in the King Air.

nal Approach

Business and Aviation on His Own Terms

The second landing Jay Vierling made in his newly purchased King Air C90B was at Narsarsuaq Airport (BGBW) in Greenland during the winter. As he describes it, the runway was uphill as well as snow and ice covered, with fjords on the sides and the end of the runway. "When you announce your approach into Narsarsuaq, you must accomplish it; there are no missed approaches," he explains in disbelief … and relief that he conquered it. "It was the most spectacular and terrifying place I've ever flown."

You could say that Jay has taken an unconventional approach in many aspects of his life. His keen sense for investing in and building businesses, and the path taken to acquiring his King Air are examples.

Dedication and Innovative Ideas

Vierling was born and raised in Cincinnati, Ohio, and still lives in the area today. Graduating from the University of Cincinnati with a degree in Electrical Engineering, his passion was designing computer systems. Straight out of college he worked for a small tech firm that was bidding on a project for Reynolds and Reynolds (R and R), whose business is providing automobile dealerships with professional services and business forms. R and R wanted a computer system that allowed dealerships payroll, accounting, and sales and parts order activities, as well as a customer database encompassed all in one dealer located microprocessor. The company Vierling was employed with was competing against much larger companies such as Hewlett Packard, Intel and Texas Instruments. Vierling explains that he wasn't in a titled position for his company, but was able to convince R and R that the little guys could deliver. His company was awarded the project, which was worth more than the company itself.

Soon after, R and R purchased the small company and Vierling left to start his own high-tech company – Computer Technology Corporation (CTC). He had a non-compete agreement in commercial business with R and R, so he focused on factory automation computer systems. The business grew and sold through distributorships in the United States and Europe, and had strategic relationships in the Far East. Eighteen years later, Vierling sold the company to Parker Hannifin in Cleveland. He had signed a management agreement to stay on for three years, and after he fulfilled that requirement he left, again preferring smaller companies.

Vierling was interested in buying a small company and using the skills he had learned over the years to help it grow. He thought a good way to find one was to start a consulting company, AEV Capital, which he still has today. Although he grew a successful practice through CEO coaching, management team development and strategic planning, he never found a company he was interested in purchasing.

Then he started serving on a variety of corporate boards and that led him to discovering a steel company to buy in northern Kentucky named Skilcraft. Since he purchased it in 2004 and put a management team in place, the company has quadrupled in size, starting at only 30 people and now employing 120. Other companies have been developed under the Skilcraft banner; the one he is currently most focused on is in the aerospace division making jet engine parts. It has received the supplier of the year award from GE's new prestigious

The route that Vierling and his team made while bringing his newly purchased King Air back to the United States from Leon, France.

Jay Vierling jumped up to flying the King Air from a Cirrus (both shown here) and says having the same avionics made the transition a bit easier.

LEAP engine program two years in a row. The LEAP program is the biggest jet engine program in GE's history.

Vierling also currently serves as chairman of the board of a South Carolina company called Avtec Inc. that makes command and control consoles for the railroad and airline industries. In the last three years, Avtec has been one of the fastest growing companies in South Carolina, quadrupling its business.

While still managing his consulting business, with clients in Ohio and South Carolina, Vierling has been advising a small company in Athens, Ohio, Sterling Ultra Cold, in which he serves as chairman of its board. The company manufactures ultra-cold freezers (-80 degrees Fahrenheit) for bio-medical research. It has developed a technology based on the Sterling engine that uses one-third of the energy of its competitor's product, as well as using refrigerant that is environmentally sustainable. The company has grown its business 100 percent per year for the last four years.

When asked what he thought contributed to his business success, Vierling answered, "I learned a lot from the first business I started and ran for 18 years, CTC. It was unusual at the time to have a small, high-tech start-up in the Midwest. We had a lot of bigger and more established competitors and I had to learn a lot in a quick manner to keep up in the industry." He continued, "I've also used the talents of several key employees from that first company and hired them to work at the other companies. I think building strong teams with good employees and developing them through mentoring and letting them feel success has also proven well for me."

Leaping into Business Aviation

Vierling took the same "gung-ho" approach to becoming a pilot as he did with his businesses. He had flown with a friend in his Piper Archer and says, "As it is with many people who take a flight in a personal airplane – the rest is history; I was hooked. My friend had a partner in the Archer, Ken Grause, who happened to be a flight instructor, and he called me one day and said he'd been looking into my consulting business online. He then asked if he helped me learn how to fly, if I would help him with his company, Technically Advanced Aircraft training." Vierling's reply: "Let me think about that … yes!"

He soon became the third partner of the Archer and signed on to be a partner with the other two in a brand-new 2005 Cirrus SR22 GTS. Vierling was still taking lessons and hadn't received his private pilot license when the trio ordered the airplane. He passed his check ride and flew to Cirrus Aircraft with his partners for transition training in the same month.

Vierling started training for his instrument rating, which he got the following year; a year or two after, he acquired his commercial. "I fell in love with the flat panel avionics on the Cirrus and flew the airplane as much as my two partners combined," he said. "I also helped a local law firm who had purchased a Cirrus and needed a commercial pilot when I could fit it in my schedule."

About four years later, it was time for a major engine expenditure, so the partners bought a 2009 SR22 G3 with G1000 avionics and FIKI. Vierling said he had been grounded too many times because of ice so the flight into known icing system was a must-have.

As Vierling's consulting business grew and he started serving on the boards of various companies, he needed to get an airplane that would carry more people and fly above the clouds without the need for supplemental oxygen. He had researched the Pilatus and decided on the King Air because of the two engines, roominess in the cabin, and the ability to be serviced anywhere in the world, with ample parts support.

One partner had already sold out and Ken, the remaining partner in the Cirrus, had become a Platinum CSIP (Cirrus Standardized Instruction Pilot). Vierling tried to find a new partner for his King Air, but plans kept falling through, so he set out to find an airplane that he could afford and refurbish to his liking. "I thought

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Vierling and his wife, Marielou, in front of the King Air where they picked it up in Leon, France.

if I could find one that had a good airframe with the right engines (preferably the Blackhawk engines with less than 5,000 airframe hours), I could restore the rest to my preferences," he explained.

Mark Rogers of Lone Mountain Aircraft, one of Vierling's clients, helped him with his search; a 2002 C90B that met Vierling's specifications was found in Leon, France. "I wasn't concerned that it was in France because Mark had imported aircraft before and he flew over with me to check it out," Vierling said. He had signed a purchase agreement from only the information and photos provided by the seller; what he didn't know was that the photos provided were of the airplane when the seller purchased it. Since then, the King Air had been used in charter operation and was pretty beat up. When he arrived to see the airplane, Vierling found it to be "one ugly, well-used bird." He insisted they renegotiate and says he left France feeling better than when he arrived!

When he got back home, the first thing Vierling did was warn his wife that when she saw the King Air for the first time, she wasn't going to like it because it was in rough shape. He assured her that would change.

Making the C90B His Own

At the time of his initial trip to France, Vierling didn't have his multi-engine rating. Once he signed on the dotted line, he knew he would have to work quickly so he could fly the King Air to the U.S. Since he was used to the G1000 avionics in the Cirrus and planned to have it installed on the King Air, he wanted to train on an aircraft that had it. He located a Diamond Twin Star in Columbus and scheduled the training. Unfortunately, the Twin Star broke down before he could get started. He wasn't able to find another one in the area, so he

Vierling (center) with David Garvey of Aviation Training Management (left) and his friend/Cirrus partner/instructor Ken Grause, at one of the snowy stops while flying the King Air to the United States.

waited for the original to come back into service. Vierling said once the plane was available, it seemed like every day the weather was worse than the day before. He was running out of time before he had planned to pick up the King Air in France. "So," he explained, "Tom Baxter from Capital City Aviation at Ohio State University flew a Twin Star to Cincinnati and moved into my house. We flew twice a day, every day, until I was ready for my check ride." Three weeks later, Vierling was headed to France to pick up his King Air.

While undergoing its refurbishment, the panel and interior of the C90B was totally stripped down to metal and wires.

It took four days to bring the King Air back. Along for the trip was his wife, Marielou, his instructor/former Cirrus partner Ken, and David Garvey of Aviation Training Management (ATM), a flight instructor who had many hours in King Airs and experience with trans-Atlantic flights. "David did the hard work of all the flight planning and while I flew the King Air most of the trip, he was there to make sure I didn't do anything stupid," Vierling said.

They retrieved the C90B in Leon, stopped in Leeds, England, for fuel and went on to Scotland where they stayed overnight. The next morning, they flew to Iceland and spent the rest of the day sightseeing. The following day was when Vierling experienced the runway in Greenland where they had to stop for fuel, then they overnighted in Goose Bay, Newfoundland, where the snow was piled as high as the top of the windows. The final day, they traveled to Bangor, Maine, where they went through customs and then on to Dayton.

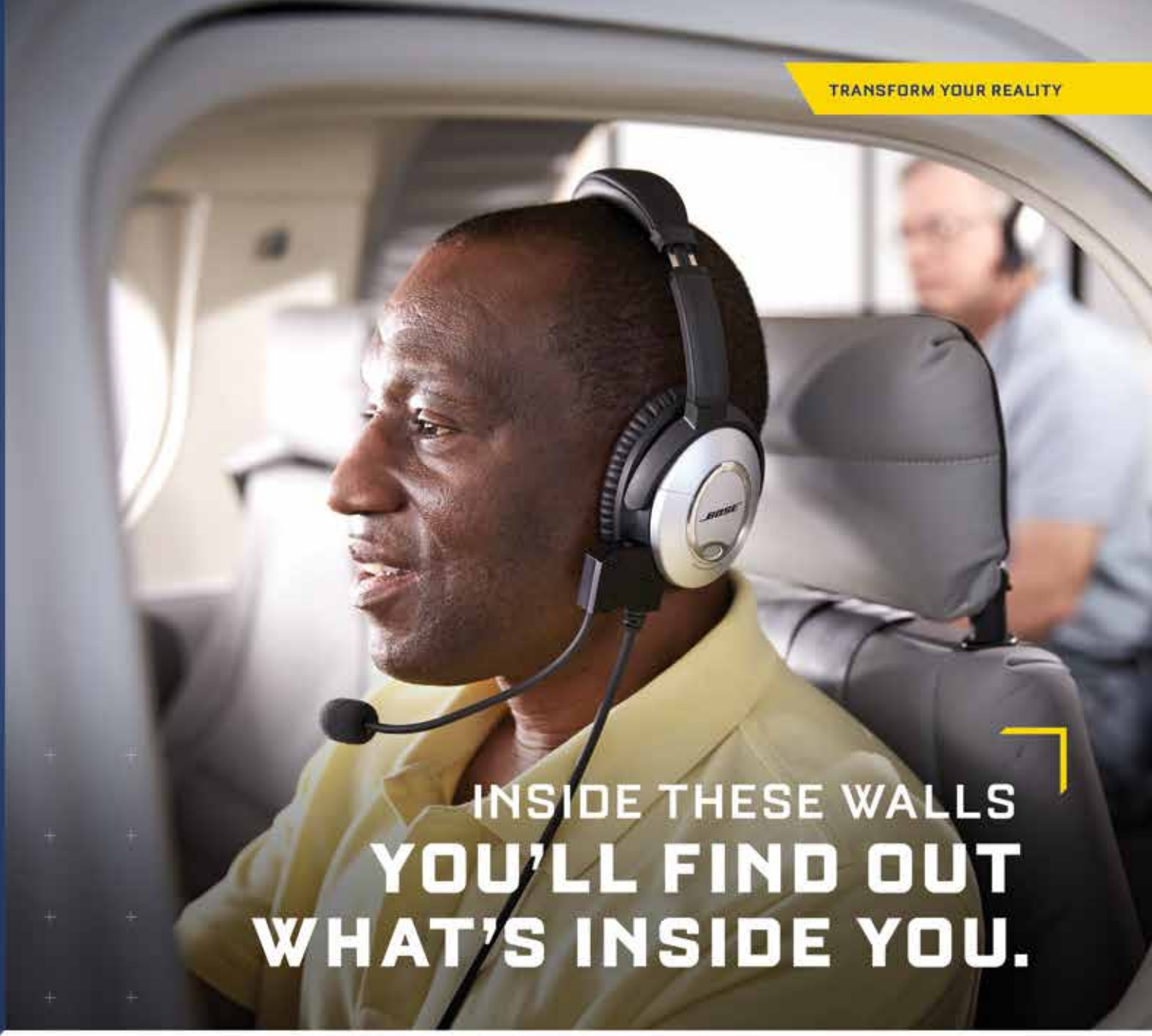
The King Air immediately went to Stevens Aviation in Dayton for a complete renovation – new avionics (G1000), a customized interior and exterior. "I got to do what I set out to do: purchase an aircraft I could afford and have it customized the way I wanted," he said. "Once it was complete, it looked like it came right out of the factory."

As soon as the C90B was updated, Vierling immediately started transition training. "It's a significant jump to go to a King Air from a Cirrus, but a big part of that is getting used to the avionics and since I had already flown with the G1000 that part was a little easier for me," he said. "Getting used to a much bigger and heavier aircraft, managing the jet engines – there's a learning curve to that, and flying at a much faster speed and getting used to carefully planning your descent and reaching the runway at the right pace for a controlled landing, were some of the challenges I faced."

The worn exterior of the King Air C90B (top) and the factory-new look it has with new paint (bottom).

One of the must-haves for Vierling was the Blackhawk engines and they haven't disappointed him. He said he can cruise at 27,000 feet at 270 knots, which is outstanding for a C90B. The King Air has allowed him to broaden his business; recently he flew with six people from Ohio to the East Coast making two stops. He's also been able to be more present at the companies he owns or advises. The freezer company located in Athens, Georgia, takes over three hours to drive to, but only 30 minutes by air. "Having the King Air allows me to be there more often," Vierling said.

In the 14 months that he's been flying the C90B, he has flown over 300 hours. Using it for 80-90 percent business, Vierling is a perfect example of how to use an aircraft as a tool. It's anyone's guess what the next innovative business he guides will be, but he'll definitely be flying there. KA



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Diagnosing Mental Illness, Medication and Certification

by Dr. Jerrold Seckler

Consider two patients. Patient A develops abdominal pain and visits his doctor, who notes the patient has a low-grade fever and tenderness localized to the lower right side of the abdomen. Additionally, if the doctor presses slowly on the lower abdomen and then suddenly lets go of the pressure, the patient winces. A CT scan or other imaging study is ordered and it's obvious that there is fluid surrounding the appendix, which is itself swollen.

The patient is taken to the operating room where the appendix is removed. When examined by the pathologist, the removed appendix shows the typical findings of acute inflammation. The next day the patient feels fine. This patient had a clearly defined anatomic condition that could be objectively demonstrated by physical examination, radiographic imaging and then confirmed by pathologic examination of the abnormal tissue that was removed.

He had acute appendicitis. Furthermore, this patient could have gone to any of hundreds of doctors and all of them would have reached the same diagnosis and recommended the same treatment.

Patient B, on the other hand, complains of feeling tired, sad, and sometimes out of control. He is having trouble sleeping. His work performance is suffering and he is drinking or smoking more in an effort to relax and "get a grip" on it. If he sees a doctor, the physical examination will be normal. Any lab or imaging studies will be normal as well. The patient has no objective evidence of any disease, yet he will be given a diagnosis.

What's more, that diagnosis might vary from doctor to doctor depending on how they interpret his subjective symptoms or how the patient himself explains them. The severity of the condition can only be based on those same subjective symptoms. Patient B is suffering from some sort of depression.

Why should this matter to pilots? The FAA is quite concerned about depression and other diagnoses that fall under the general category of mental or psychiatric disturbances. FARs 67.107, 67.207, and 67.307 list "mental conditions" and substance abuse issues that must result in the denial of a medical certificate. Because the diagnosis of these conditions are in large part highly subjective, how a given practitioner describes and classifies the condition can make a great deal of difference in how the FAA will react. Furthermore, the medications usually prescribed for psychiatric disturbances all work on the chemistry of the brain, modify behavior, and therefore are viewed with great suspicion by the FAA.

To add insult to injury, the conditions classified as "mental illnesses" vary with societal norms, which change over time. Yesterday's psychiatric condition is today's non-pathological lifestyle choice. For example, homosexuality was classified as a mental disease until fairly recently; and conditions that were previously classified as laziness, malingering, etc. are now bona fide mental "conditions" with specific diagnoses. In the classification of mental conditions, the only constant is change.

In an attempt to rationalize the methodology used to diagnose mental disorders, the American Psychiatric

Association publishes a thick book called *Diagnosis and Statistical Manual of Mental Disorders* in an attempt to accurately describe a variety of conditions and what must be present to diagnose them. The most recent iteration of this series is Volume V and this Bible of Psychiatric Diagnosis is called DSM-V. This book is used in conjunction with the World Health Organization's "International Classification of Diseases" (ICD-11) as the standard for the diagnosis of mental conditions.

DSM-V is quite complex. Mental conditions are broken down into 20 major groups, including Schizophrenia Spectrum and Other Psychotic Disorders, Bipolar and Related Disorders, Depressive Disorders, Anxiety Disorders, Personality Disorders, Neurocognitive Disorders and so on. The diagnoses described are grouped according to age of onset, internal factors like anxiety, mood changes, and physical symptoms, as well as external factors like disturbances of conduct, impulsive behavior, substance abuse and so on.

As you might imagine, the various groups overlap in many ways and this can lead to confusion in the precise classification of a specific patient. It is this uncertainty that makes the FAA uncomfortable. It is also why it can be difficult to get a Special Issuance (SI) for psychiatric diagnoses. In evaluating a diabetic or cardiac patient for an SI, the FAA has objective data to use in making its decision. Such objective data is lacking in most psychiatric situations and therefore psychiatric conditions are problematic when it comes to deciding who should be allowed to fly and who should not.

Let's consider some specific diagnosis and see how they can affect a pilot's ability to obtain or maintain a medical certificate.

Many psychiatric conditions are clearly incompatible with flying. Schizophrenia and disorders where the patient is out of touch with reality are clear examples. Patients who have a history of suicidal ideation form another group that will not, and should not, be medically certified. The crash of Germanwings 9525 in 2015, where the first officer locked the captain out of the cockpit and flew his Airbus into a mountain, thereby simultaneously committing suicide and murdering 149 innocent bystanders brought this issue into clear focus. There is clearly a problem with these diagnoses, as medical ethics prevents a physician from divulging information about their patients, but if a pilot is diagnosed with a significant psychiatric disorder and fails to report it on his FAA medical application, there is a good chance it will not be discovered by the examiner. This issue of patient confidentiality versus aviation safety is a hot topic for certification and regulatory agencies worldwide.

Unfortunately, the majority of psychiatric diagnoses are not clear cut. When does sadness become depression? When does vigorous hyperactivity become mania? When does compulsive behavior, something that can be really useful for a pilot, cross into abnormally compulsive behavior? Generally speaking, the line between normal and pathological is drawn when the behavior in question begins to interfere with normal everyday activities. When feeling low makes it hard to go to work, or accomplish tasks or personal goals, or when compulsivity gets in the way of normal functioning, we call it pathologic. It's very important for pilots to be diagnosed accurately when they have complaints that can point to actual psychiatric problems. Situational sadness, for example, is not depression. Yet it is often treated as if it is. The problem for a pilot arises when he or she goes to a health care professional and is given a psychiatric diagnosis. This diagnosis will almost certainly come with a prescription for a sedative, a tranquilizer, or an antidepressant, and at that point the pilot will run into major problems with the FAA.

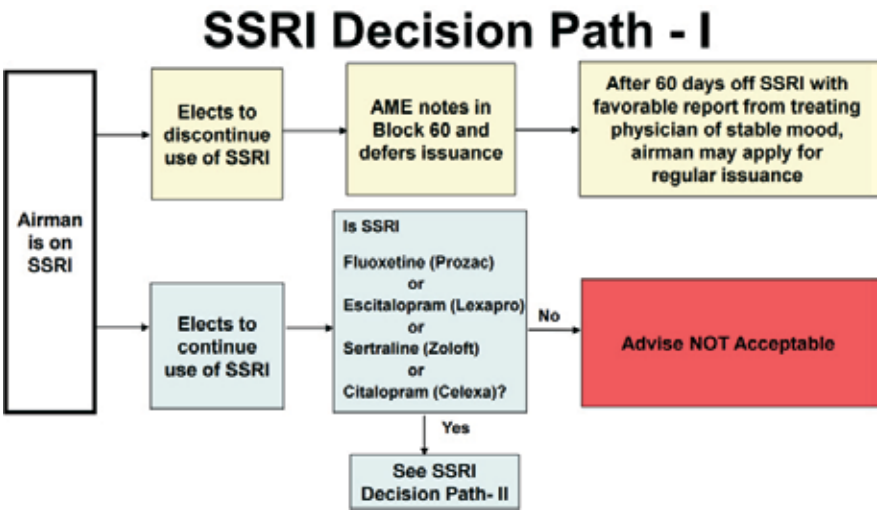
Briefly stated, most psychiatric diagnoses are disqualifying and an AME cannot issue a medical certificate. These diagnoses include: Adjustment Disorders requiring medication, Attention Deficit Disorders, Bipolar Disorders, Minor Depressions requiring medication, Major Depressive Disorders, Personality Disorders, Psychosis, History of Suicide Attempt and Substance Dependence. While an applicant might be able to obtain a certificate via the Special Issuance Process, the AME is not allowed to issue the certificate to an applicant with any of those conditions, and those categories make up the bulk of psychiatric diagnoses.

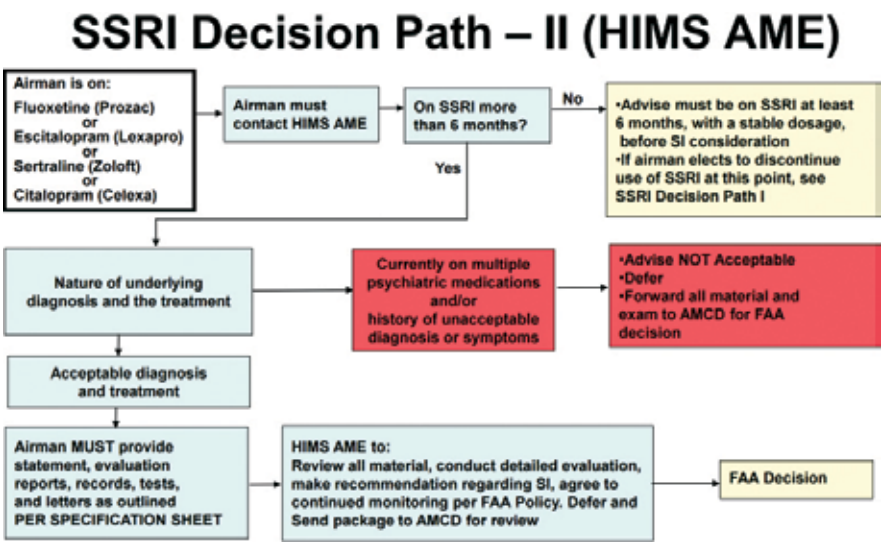
The real difficult part for pilots who have psychiatric issues is that while many psychiatric conditions can be fairly well managed with medications, essentially all psychoactive medications, with four specific exceptions, are not acceptable to the FAA. The FAA will not certify pilots who are taking sedatives, tranquilizers, antipsychotic drugs, antidepressant drugs (with four exceptions), analeptics (nervous system stimulants), anxiolytics (anti-anxiety agents), and hallucinogens. The four exceptions are all in the antidepressant drug category and are specific SSRI (Selective Serotonin Reuptake Inhibitors). Serotonin is a chemical that is involved in transferring information between neurons (nervous system cells), and SSRI drugs increase the amount of serotonin available in the brain. These drugs are quite useful in treating depression, but because they increase the available serotonin levels in the brain, and since serotonin affects nerve cell transmission generally, they have potential side effects, including drowsiness, nausea, insomnia, diarrhea, restlessness, dizziness and blurred vison.

The four specific SSRI medications that can be approved by the FAA are: Fluoxetine (Prozac), Sertraline (Zoloft), Citalopram (Celexa), and Escialopram (Lexapro). But even here, there are conditions.

Below is the decision tree that an AME must use when evaluating an applicant on one of the "approved" medications:

As you can see, getting approval when you are on an "approved" SSRI antidepressant is not for the faint of heart. It's time consuming, expensive and generally very





difficult. It requires visiting with an HIMS AME, an AME with special training in "Human Intervention and Motivation Study" programs. These programs were originally set up to deal with pilots who had substance abuse issues and have now been expanded to deal with pilots on SSRI medications. There are only about 200 HIMS AMEs in the country, so finding one may present issues for pilots who live away from large metropolitan areas.

The very few approved psychiatric medications and the difficulties in getting a medical certificate when taking one of those specific medications presents a real dilemma for a pilot. On the one hand, if a pilot has a true psychiatric condition and needs medication then he ought to be on medication, even if this will make it difficult for him to fly. On the other hand, if a pilot can do without such medication he can continue to fly, but if his symptoms are significant he may actually be more at risk than a pilot who is properly medicated. It's a real Catch 22. It will be interesting to see how, or if, the FAA addresses this problem when it issues rules implementing the medical certification reform promised in the Pilot's Bill of Rights (PBOR) II legislation. KA

Dr. Jerrold Seckler is 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.

King Air Operation on Unimproved Landing Strips

by Tom Clements

I am sure many of my readers have a great deal more experience than I have in operating King Airs in remote areas where paved runways are few and far between. In fact, I'd wager that for many years now the King Air has been perhaps the most popular airplane in commercial service doing this type of work worldwide. Northern Canada, the Outback of Australia, Medivac work in remote areas in this country and elsewhere, war zones … you will find King Airs in all of these places providing dependable and safe service.

ROYAL FLYING DOCTOR SERVICES

Although my routine flying has mostly been from full-service airports, I have been fortunate to experience quite a few not-so-nice locations in my 44 years of King Air operation. A few that come to mind are Las Cruces and others on the southern Baja coast of Mexico, quite a few of the backcountry strips in Idaho, and remote areas of Alaska and Canada. Granted, not all runways in remote areas are unimproved. In fact, some are quite nice. However, the chance of finding a rough one tends to increase in direct proportion to how far it is from civilization.

The intent of this article is to present some procedures and techniques that help allow this type of operation to be conducted with minimum additional risk of harm to the airplane and its crew and passengers.

Before I discuss specific King Air procedures, it is important to remind us of the considerations that apply to any and all airplane operations in these types of environments. Weather, fuel, weight and balance, and alternative courses of action are four important considerations for all flights, but they take on added significance as the remoteness factor increases.

Weather: Keep in mind that reporting sites may be quite scattered. Also, the wonderful downlink weather that has had such a huge positive impact on our real-time weather knowledge in the last couple of decades may not be available. Being able to place a telephone, HF or satphone call to a person at the destination airport can be wonderful help. Unfortunately, that capability does not always exist either due to the lack of equipment or the lack of a person to accept the call. Even when we do make contact with a person at the airport, the information we receive may be quite outdated by the time we arrive.

Fuel: To get to and from the remote location involves careful fuel planning since the options of refueling places may be quite limited and the weather situation may be more unknown than we'd like. There is a strong urge to tanker a lot of fuel yet that urge is counterbalanced oftentimes with the recognition that the remote strip's length is short and safety is negatively impacted the heavier we are when departing.

Weight and Balance: This routine consideration for every flight operation usually takes on more significance here due to the length and condition of the remote strip, and the uncertainty of what we may find there. For example, did a recent downpour wash out one end? Did the passengers we're picking up have a really successful trip and hence have a couple of hundred extra pounds of meat or fish to fly out? Did they make friends with a couple at the lodge and offered them a free flight out? It is amazing how often "the best laid plans" seem to go awry.

Alternates and Alternatives: Of course we will want to have an alternate airport in mind. What if the Otter landing before us ground-looped and is sitting in the middle of the runway? What if the weather turned so

bad that we never saw the runway? But also, even with a usable and visible runway, what alternatives should be considered when the unexpected happens? "Wow, the wind was not nearly what was forecast!" Or, "We're going to need to make another trip. No way can we depart with that extra meat and passengers."

Being legal and safe … these considerations apply to all operations at all times. Yes, there are times and events that make it difficult, perhaps impossible, to dot all of the i's and cross all of the t's. As I relate in *The King Air Book,* when I was being briefed before the ferry flight of the three 350s from Wichita to Japan – via the northern route through Siberia – I'll never forget the comment, "We don't make missed approaches." When the nearest alternate airport may be over 500 miles away, landing at the planned destination can become mandatory … one way or another.

Now let's get King Air specific. What techniques can we use that will protect the plane and its occupants from unnecessary wear and tear and worry?

Starting: It is not uncommon to find a paved parking and run-up pad at a remote strip and when that unexpected bonus exists, using it can eliminate the need for any change in starting technique. Got a broom? It's nice to be able to sweep the pad clean of gravel and dust that was blown up in the last storm.

Engine ice vanes were extended before we landed and have remained extended ever since. Although this has become common practice on the newer King Airs with their four-bladed propellers and higher idle speeds, even on paved surfaces, it is still an abnormal procedure for older three-bladed models with the chin-style cowling. Do it now.

When no pad exists – or it is already occupied – then we are forced to start on the dirt/gravel/sand surface. Grass? Firm turf with a nice coating of grass is as benign as a paved surface for starting, so have at it using normal procedures. The problem with grass is that we often don't know how firm or soft it is by visual inspection while taxiing in after the previous landing. It is necessary at times to shut down before we exit the firm runway and to give the prospective parking spot a careful walk-over to help decide if it is firm enough for our usage. If in doubt, avoid.

So now we are on that dirt/gravel/sand surface that cannot be swept clean with a broom. Time to start engines. What changes should we make?

I suggest two differences. First, start the left engine first. Although we hope that no rocks will be picked up by the propeller, on a surface like this it is a possibility even with the best of techniques. The clockwise spinning props – as viewed from the back – mean that the blade is moving right-to-left as it passes closest to the ground. If a rock is in fact picked up by the prop,

it should be displaced to the left, away from the nose. On the other hand, the right side's propeller tends to hurl any rock right into the nose, nose gear door, or other forward part of the plane.

Second, remain at Low Idle and conduct two battery starts without using a generator to recharge between the starts. Sure, this puts more drain on the battery, but it can handle it without problems. Yes, the second engine will not benefit from a generator assist, so the stabilized speed will be lower and the peak ITT will be higher … but well within comfortable limits.

The reason we "must" forego the generator usage is that N1 versus generator load limits will be exceeded unless we go to High Idle on the left engine. Although the propeller-disturbed air at Low Idle will not guarantee *no* rock damage in all cases, High Idle will almost assure that there *will* be some rock damage … if not to the nose, then to a propeller blade or blades. The difference in disturbed air factor between Low and High Idle is greater when the Low Idles are set close to 50 percent N1, as on the older three-blade-propeller airplanes. The difference is not as dramatic on four-blade-propeller airplanes since their Low Idles are set closer to 60 percent, yet all High Idles are near 70 percent.

How about starting in feather to keep RPM, wind, and noise down, so there is less dirt/gravel/sand displaced? There is absolutely no question that RPM and noise will be less. As for wind? Of course, the normal prop wash blowing back over the nacelle and wing is eliminated but how about the "wind" the ground feels as the blade makes that right-to-left pass? In most cases this will actually be greater in feather, the exception being the three-blade models with their low Low Idle speed.

I suggest not starting in feather on these surfaces until you conduct a simple test. In your own King Air,

wait for a rainy day and find a puddle as you taxi to or from a flight on a paved ramp/taxiway. Stop with your left prop over the puddle. See how much water is displaced while sitting there at Low Idle. Now feather the prop and see what is now happening to the water. Of course, how much surface wind exists and its direction will affect these results so realize that what you are observing won't always be the same when dirt replaces the water and the existing wind changes. Nevertheless, you will probably conclude that the feathered prop blades do not offer much, if any, benefit in this situation.

After the right engine has completed its battery-only start and is stable at Low Idle, now is the time to turn on the generators. Although doing them one-at-a-time is fine, there is nothing wrong with activating both switches simultaneously. That's the technique I use. Keep in mind your Low Idle ITT limit since ITT will rise due to the generator load. For it to reach the Low Idle limit is extremely rare, likely only with three-blade props and their minimum Low Idles. When King Airs had NiCad batteries – and a few still do! – the initial generator load went higher than it does with the current Lead-Acid batteries, so the odds of exceeding the ITT limit were slightly increased.

Even though only one reader in a hundred may observe ITT rising to and trying to exceed the Low Idle limit, we must be prepared for that uncommon occurrence. What to do? Turn off the generators, of course! Next, take the condition levers and add about five percent N1 to both engines and try the generators on again. The ITT still tries to pass the limit? (And this is extremely unlikely!) Turn the generators off again while you add another five percent or so, and try again.

Some of my readers may be wondering why running the compressor faster – which requires more fuel flow – would lower ITT. Realize that as compressor speed increases, the engine receives more air and three-fourths of that air is used for cooling not combustion. It turns out that up to High Idle, 70 percent N1, the cooling effect of the air is greater than the heating effect of the fuel. Cool!

(As a side note: One of my King Air pet peeves is that the Low Idle ITT limit is not marked or placarded in the cockpit in any manner whatsoever! Unless you've studied the POH with an eagle eye or received thorough training, it's a mystery. Well, let me just give them to you: PT6A-20, -20A, -135, -135A: 685° C; -21, -28, -41: 660° C; -42, -52, -60A: 750° C. Notice that all of these are well below the top of the gauge's redline.)

Before Takeoff Checks: This is not the time for doing all of the first-flight-of-the-day ground checks! That is nearly a guarantee that you will be leaving rock dings on propeller blades, gear doors, flaps, and maybe elsewhere.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If you cannot accept this fact and forego the checks, then remote strip operation is not for you. Shorten down to some version of CIGAR, make sure the gyros are all erected and the avionics are set, and let's hit the road!

During this rather brief ground operating period, in most cases leave the air conditioning off. We may not have enough N1 speed to handle the load and, if the runway is short, we'll want it off for takeoff anyway. A little extra cabin temperature is something that is often unavoidable on short desert and jungle strips. Airborne? Ah, now we can use whatever we want.

Taxiing: We release the brakes and prepare to add that little burst of power to get us moving. Stop! Don't push those power levers forward! There's a much better way. A quick increase in propeller blade angle will be just the ticket to provide enough burst of thrust to get the airplane rolling and it causes a decrease, not an increase, in RPM.

Model 300 pilots have it the easiest here: Just tap the "Turbo Boost" switch up momentarily. That's the slang term I give to the "Grd Idle Stop Test" switch that makes the blade angle jump from the Ground to the Flight Low Pitch Stop (LPS), an increase of about 12 degrees. The model 300s with the updated/modified LPS system and all 350s have to add a little power to move to the Flight LPS and we want to avoid that increase in RPM. Hence, all models other than the 300 can do it this way: Just a quick pull of both propeller levers into and immediately out of the feather detent. Hey! Look at that! She started rolling just great with no power increase, thanks to that sudden increase in propeller bite!

While taxiing, avoid use of *any* Beta unless you are now rolling on a reasonably good surface. Just leave the power levers at Idle and ride the brakes or coast with the propellers pulled into feather. In situations like this, additional brake wear is the price we pay for protecting the propeller blades.

Try to keep the airplane moving until right up to the start of the takeoff roll. If you are forced to stop – waiting for other traffic, perhaps – then use the technique presented above to start rolling again.

The Takeoff: Will we use approach flaps? That depends both on the length and the roughness condition of the runway. Keep in mind that most of the 90-series King Airs have no POH data for takeoff with approach flaps. If you decide that flaps are advantageous, wait to extend them until taking the runway so as to better avoid rock hits onto the extended flaps. Some pilots wait to extend the flaps until actually rolling down the runway. That's a poor technique for two reasons: First, our attention must be divided as we check the flap indicator to verify that the flaps did what we wanted them to do. Second, what if we have a split flap situation? Will we recognize it quickly enough to abort, or will we discover the surprise

only after we rotate? I want to make absolutely sure that the flaps are behaving themselves before I start the takeoff roll.

Ice Vanes? Many pilots want to leave the vanes extended for takeoff to better protect the engine from FOD, Foreign Object Damage. However, with the combination of forward velocity and a positive propeller blade bite, FOD is impossible. If the altitude and OAT are such that your engines can make full power even with the vanes extended – "Engine Anti-Ice On" for the later models – then I suggest leaving them extended just in case we abort the takeoff and use Ground Fine or Reverse to help stop. On the other hand, an old PT6A-20-powered A90, in the summer in Baja, will be ITT-limited and the vanes will cause a slight reduction in takeoff power, so I would vote for retracting them on the runway. If we abort, make sure we leave Reverse no later than 40 KIAS…unless doing so will cause us to "crash" off the end of the short runway. Repairing engine FOD will be less expensive than repairing bent props and broken landing gear!

Landing: I know this may seem out of order, since we must have landed on this marginal strip before we had to depart. Yes, of course, but I chose to start the discussion with the start-up, taxi, and departure so I have saved this for last.

Engine anti-ice, ice vanes, should be extended before we touch down. For some models, this is routine practice; for others, it is not. Even though the advantage of extended ice vanes may be small when proper use of Beta and Reverse is used, there is almost no downside to their use.

Run the propeller levers full forward before touchdown. Here is a case in which Maximum Reverse may be utilized and having the prop levers forward before doing so is imperative. Sure, it's noisier, but so what?

Back to the issue of FOD: The chance of FOD is so small as to be nearly impossible if (A) we are moving fast enough that any disturbed ground debris will be left behind, or (B) our propeller blade angle is positive, not stirring up debris and blowing it forward. So the proper technique for using Reverse here is "Full and Fast, then Out." By that, I mean lift those power levers *immediately* at touchdown and *rapidly* move them all the way aft and down to Maximum Reverse. (Later models require the second lift to pass behind Ground Fine.) It has been my observation through thousands of training flights that few pilots get the levers all the way back and down. Realize that, due to the arc the levers move through, the last bit of travel is achieved more by pushing toward the floor than by pulling toward the baggage compartment!

ROYAL FLYING DOCTOR SERVICES

Now, as you see the IAS hit 60 knots, start moving the power levers up and forward so that we are out of Reverse by 40 KIAS. On a paved runway, this is where you want to be at Ground Fine or "Top of the Stripes." However, if this is an unpaved strip with lots of dirt/gravel/sand then, as in taxiing, we want to be all the way to Idle, even though it will require additional brake usage.

Another procedure that helps on these types of landings is the immediate retraction of flaps at touchdown. Having a copilot to work the flaps is ideal, but even when operating single-pilot, I suggest taking your hand off of the power levers after Max Reverse has been attained, moving the flap switch fully up, then returning to the power levers. Two benefits are derived in so doing: First, the airplane anchors more solidly to the runway and, when brakes are used, there is less chance of locking up and scuffing or blowing a tire. Second, the flaps have less exposure to damage from rocks kicked up by the main tires.

Yes, it goes without saying that grabbing the gear handle instead of the flap handle is a horrible, expensive, mistake and that's why doing the flap retraction in normal, single-pilot, operation is rarely considered to be a good thing. Here, however, it makes sense. In a King Air, it is comforting to realize that the flap handle and gear handle are in very different locations. Keep your hand on the power quadrant, don't reach forward to the subpanel!

In closing, years ago when I was based in Hayward, California, one of my King Air training customers was an owner-pilot of a sweet C90 that he loved to use for trips to the many dirt strips by the ocean in Baja. When he returned from these trips – my goodness! – Beechcraft West, the Beech dealer based there who serviced the plane, would spend days fixing the airplane! Almost always all prop blades had to be filed, flaps and gear doors were patched and painted as needed, and the engine compressors were always checked for evidence of FOD. I suggested that the owner take my wife and me on one of his extended weekend getaways and let me demonstrate some techniques that I was sure would alleviate these post-trip maintenance nightmares. He immediately accepted my suggestion and I presented to him, via demonstration and practice, what you have read here. Amazing! From that point on, Beechcraft West found themselves with little if anything to address when the plane returned.

I hope you will consider these techniques and incorporate them into your procedures for use on unimproved strips. They really do work! KA

King Air expert Tom Clements has been flying and instructing in King Airs for over 44 years, and is the author of "The King Air Book." He is a Gold Seal CFI and has over 23,000 total hours with more than 15,000 in King Airs. For information on ordering his book, go to *www.flightreview.net*. Tom is actively mentoring the instructors at King Air Academy in Phoenix.

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

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New Procedures for SoCal Area Effective November 10

by Kim Blonigen

Phase One of the Southern California Metroplex Project will begin on November 10, 2016. The Metroplex Project, approved in early September, is designed to enhance the safety and efficiency of the airspace in Southern California by utilizing performance-based navigation procedures, as well as optimizing the air traffic sectorization at the local FAA facilities.

There is a total of four implementation phases in the project with the remaining being executed in January, March and April of 2017, with the full project expected to be completed in late April of 2017.

The National Business Aviation Association (NBAA) provided comments on the procedures that are part of phase one and effective November 10:

RNAV and Conventional STARs

- BUR/VNY WEESL ONE STAR (RNAV)
- LAX/SMO WAYVE ONE STAR (RNAV) – LAX arrivals on this procedure are props only
- LGB/SNA/SLI/FUL/TOA KAYOH SIX STAR (Conventional) – modified to incorporate metroplex waypoints
- ONT/ONT Satellites SETER FOUR STAR (Conventional) – modified to incorporate metroplex waypoints
- SAN BAYVU FIVE STAR (RNAV) – ties into SAN RNAV/RNP RWY 27 approach
- SAN LUCKI ONE STAR (RNAV) – optimized profile descent procedure
- SBA PITBL ONE STAR (RNAV) – new SBA STAR (Procedure NA until April 27, 2017)
- SDM CHASR ONE STAR (RNAV) – designed to segregate SDM arrivals from SAN arrivals *(note that Non RNAV equipped aircraft destined to SAN will be assigned the BARET STAR)*

RNAV SIDs

- LAS STAAV SEVEN SID (RNAV) – modified to incorporate SoCal metroplex waypoints
- LAS TRALR SEVEN SID (RNAV) – modified to incorporate SoCal metroplex waypoints
- SAN ZZOOO ONE SID (RNAV) – replaces the current POGGI SID
- SBA GAUCH ONE SIDE (RNAV) – designed as northbound RNAV off the ground procedure
- SBA MISHN ONE SIDE (RNAV) – designed as eastbound RNAV off the ground procedure

Approach Procedures

Burbank/BUR

- RNP Y RWY 8 (RNAV)
- GPS Z RWY 8 (RNAV)
- ILS Z or LOC Z RWY 8 (conventional)
- ILS Y or LOC Y RWY 8 (conventional)

Carlsbad/CRQ

- RNP Z RWY 06 (RNAV)
- RNAV/GPS Y RWY 06 (RNAV)

Los Angeles International/LAX

- ILS or LOC RWY 06R (conventional)
- GPS Y RWY 06R (RNAV)

- GPS Z RWY 06R (RNAV)
- ILS or LOC RWY 06L (conventional)
- RNP Z RWY 06L (RNAV)
- GPS Y RWY 06L (RNAV)
- ILS or LOC RWY 07R (conventional)
- GPS Y RWY 07R (RNAV)
- RNP Z RWY 07R (RNAV)
- ILS or LOC RWY 07L (conventional)
- GPS Y RWY 07L (RNAV)
- RNP Z RWY 07L (RNAV)

Long Beach/LGB

- RNP RWY 12 (RNAV)
- RNP RWY 25R (RNAV)
- RNP Y RWY 30 (RNAV)
- VOR TAC RWY 30 (conventional)
- ILS or LOC RWY 30 (conventional)
- GPS Z RWY 30 (RNAV)

Palm Springs/PSP

- RNP Z RWY 13R (RNAV)

San Diego International/SAN

- GPS Y RWY 27 (RNAV)
- RNP Z RWY 27 (RNAV)
- LOC RWY 27 (conventional)

Burbank/BUR

- RNP Y RWY 8 (RNAV)
- GPS Z RWY 8 (RNAV)
- ILS Z or LOC Z RWY 8 (conventional)
- ILS Y or LOC Y RWY 8 (conventional)

Santa Monica/SMO

- VOR-A (conventional)

Orange County/SNA

- GPS Y RWY 02L (RNAV)
- RNP Z RWY 02L (RNAV)
- RNP Z RWY 20R (RNAV)

As far as operational impacts with initialization of phase one: During the first two weeks of Phase One implementation, no significant national traffic management initiatives are expected; mile in trail restrictions may be slightly higher during peak traffic periods for internal Los Angeles Center departures and adjacent facilities (Oakland and Albuquerque Centers); and there is potential for periodic departure flow restrictions over IPL and TRM (expected to remain below 15 minutes). KA

The Racer's Edge Part Two

The Travel Air Company and its speedy Type "R" monoplane would dominate the 1929 National Air Races and realize Walter H. Beech's dream of beating the Army and Navy to the checkered flag.

by Edward H. Phillips

Air racing had always been among Walter Beech's favorite activities. He had flown Laird "*Swallow*" biplanes to victory in the early phase of his career, and in 1925 had earned a perfect score in the inaugural National Air Tour for the Edsel B. Ford Reliability Trophy. A year later, accompanied by navigator Brice Goldsborough, Walter repeated that feat by winning the second Ford Tour flying a modified Travel Air Model BW equipped with the latest flight and navigation instruments. As a seasoned competitor and a savvy salesman for the Travel Air Manufacturing Company, Beech recognized the value of air racing not only for its publicity value, but for its contribution to advancing airframe and engine technologies.

Although time has obscured the facts, a long-standing story alleges that after the 1928 National Air Races (NAR), Walter became increasingly unhappy that the competition was dominated by the powerful biplanes of the United States Army Air Corps and the United States Navy. Streamlined and powered by either static, air-cooled radial or V-type liquid-cooled engines, the military's biplanes frequently took the checkered flag. By contrast, during the early- to mid-1920s a majority of commercial-built aircraft were powered by small, low horsepower engines and stood little chance of defeating their government-backed adversaries. Beech reportedly bristled at the thought of civilian pilots being humiliated each year at the races.

As the tale continues, one day late in 1928 Walter shared his views with a few of the company's engineering staff. He expressed his displeasure that the fastest machine on Travel Air's flight line was a Type D4000 equipped with special "speed wings" and powered by a 225-horsepower Wright J5 radial engine. The biplane was capable of speeds approaching 150 mph, but remained hopelessly outclassed by the faster, more powerful Army and Navy ships. One of the engineers listening to Beech's diatribe was Herbert M. Rawdon. He not only agreed with his boss but understood the problem and knew how to solve it. In Rawdon's opinion, Travel Air needed to initiate a dedicated, well-funded project aimed solely at building an airplane that was specifically designed for the rigors of closed-course air racing.

Decades later before his death in 1975, Rawdon recalled that he completed some rough sketches of an airplane he believed could defeat all comers at the 1929 NAR. It was a low-wing monoplane with a wire-braced wing and fixed landing gear. Inspiration for the design stemmed from Rawdon's admiration of the sleek, powerful and highly streamlined floatplanes that competed in the Schneider Trophy races during the 1920s. Chief among these were the British Supermarine monoplanes that included the graceful S.5 powered by an 875-horsepower Napier Lion VIIB engine. Created by Reginald J. Mitchell, the S.5 won the 1927 Schneider contest at a speed of more than 280 mph. In addition,

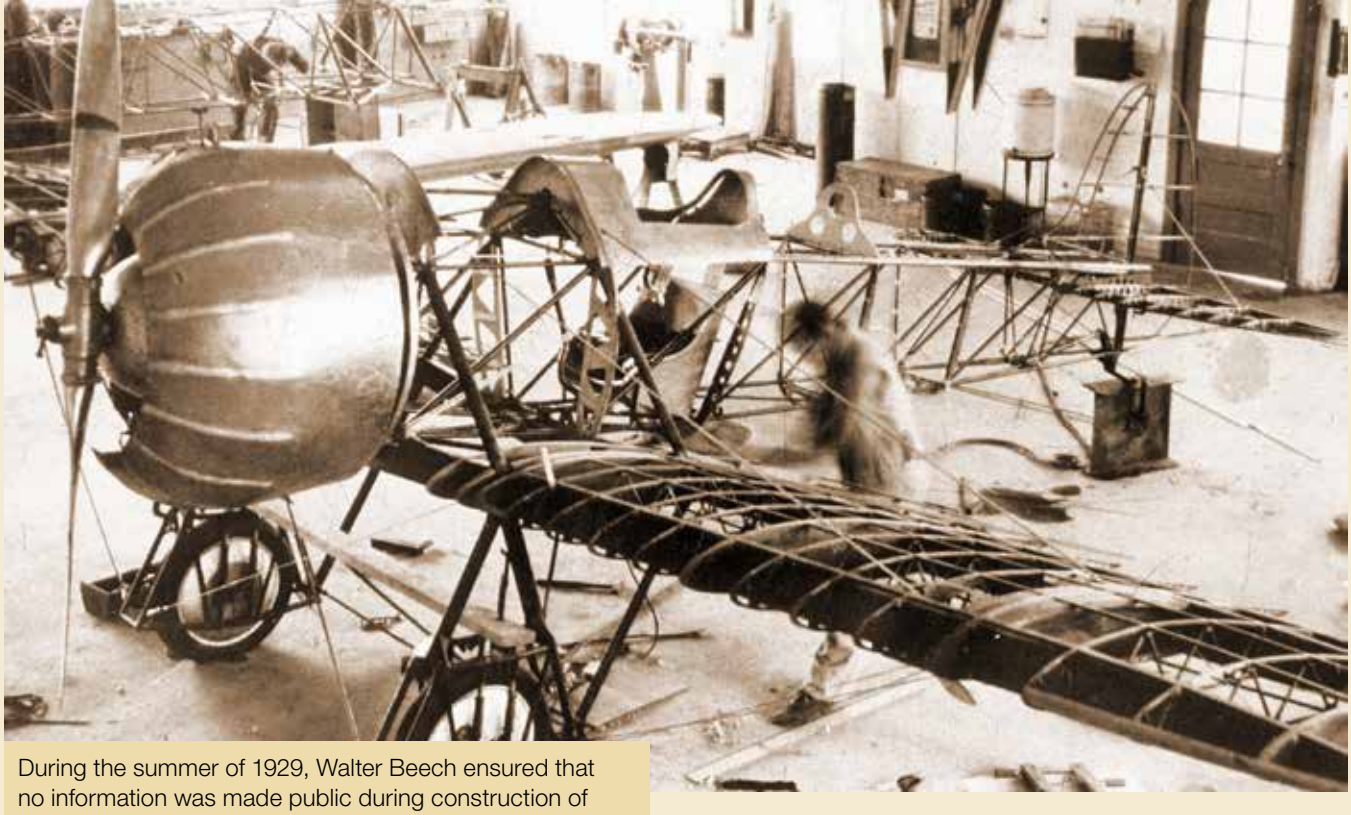
Herbert Rawdon (left) was a talented engineer who proposed that the company build his design for a single-seat monoplane that could beat the best the United States military had to offer. Rawdon eventually tapped fellow engineer Walter Burnham (right) to assist him designing what would become known as the Travel Air Type R monoplane. Both Rawdon and Burnham were early employees of the company and helped develop the Type 5000 and Type 6000 cabin monoplanes in 1926 and 1928, respectively. (EDWARD H. PHILLIPS COLLECTION)

Rawdon was influenced by the equally sleek and fast Italian machines built by Macchi-Castoldi expressly for the Schneider competitions.

It was, however, the use of a V-type powerplant in the British and Italian airplanes that later played a key role in Rawdon's decision to power his Travel Air racer with an in-line engine. He estimated that an inverted, in-line engine of 250-300 horsepower would be adequate to achieve a maximum speed of at least 165 mph. To attain that speed, however, Rawdon realized that the airplane's weight would have to be kept to a minimum consistent with requirements for structural integrity, and reducing parasite drag would be of paramount importance. He also knew that if the airplane was to be entered in the 1929 NAR, only 12 months remained to design, develop, build, and test the ship. He needed an able assistant, and he knew fellow engineer Walter Burnham was the right man for the job. Burnham was known around the factory as a quiet man who rarely complained about anything, but his competence with a slide rule and prowess in forming wood and sheet metal was beyond reproach.

The dawn of 1929 found the two men secretly creating dozens of detailed engineering drawings as well as a myriad of other tasks associated with designing a special airplane. At that point in time no one, not even Walter Beech, knew about their work. Herb and Walter began the ambitious project with the understanding that all of the work would have to be done without pay, at home and on their own time. They were making good progress, but the nagging problem of finding a suitable engine had to be resolved soon or their efforts would grind to a halt.

By the late 1920s, air racing had become popular with many the American public. They often flocked to local, regional and national races to watch daredevil pilots, such as the one flying a Cessna AW, round the pylons in high-G turns, perilously close to the ground.
(EDWARD H. PHILLIPS COLLECTION)



During the summer of 1929, Walter Beech ensured that no information was made public during construction of the Type R racers. He ordered that all windows in the experimental shop be frosted, posted a security detail, and refused to divulge even a scrap of information to newspaper reporters who were determined to find out what was happening inside the Travel Air factory. (EDWARD H. PHILLIPS COLLECTION)

In May 1929, Rawdon thought they had a solution. Walter Beech received a visit from a gentleman who claimed to be developing an in-line, 300-horsepower engine and asked if Travel Air would consider building a racer to accommodate his powerplant. Beech, listened intently as he puffed on his pipe. He liked what he heard and his passion for racing was suddenly reignited. Fortunately, he had invited Rawdon to attend the meeting. Walter asked his engineer what he thought about the presentation, and Herb jumped at the opportunity to reveal a set of three-view drawings depicting his racer with an in-line engine. The timing was perfect. Beech immediately grasped the sleek ships' potential, and Rawdon recalled that "Beech's enthusiasm took immediate effect, and he was all-out to build the airplane."

Unfortunately, a few weeks later it became obvious to Beech that the engine designer had been too optimistic and lacked technical evidence to support his claims. As more of the truth became known, Walter learned that the engine design was in a state of infancy and far from full-scale development. Both the designer and the engine quickly disappeared from the scene. The setback, however, did nothing to dampen Walter's determination to proceed with building Rawdon's speedster. The 1929 aerial extravaganza of the NAR was fast approaching, and it was clear to Beech that Herb's design was exactly what Travel Air needed to recapture its racing heritage. Just the thought of the monoplane taking the checkered flag at the prestigious NAR served to raise Walter's competitive spirit to a fever pitch. As Rawdon and Burnham's search

In late August 1929, Herbert Rawdon was caught on film "propping" the 420-horsepower Wright Whirlwind soon after the first Type R was rolled out of the factory. Initial test flights were conducted without the streamlined cowling that was still being fabricated. When installed the cowling increased the racer's maximum speed to more than 200 mph. (EDWARD H. PHILLIPS COLLECTION)

for a suitable engine continued, Beech quickly wrapped the program in a cloak of secrecy that became so tight that only a handful of essential people knew what was actually going on behind the scenes.

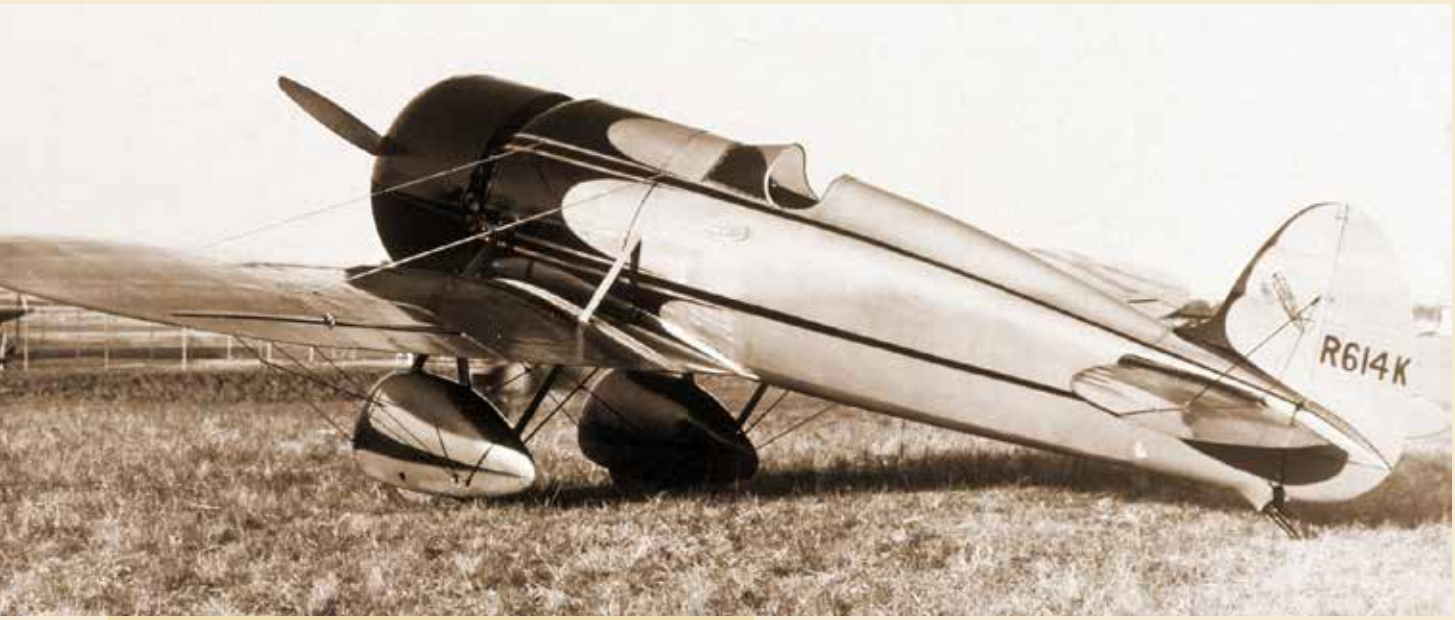
In May, two key developments occurred that would profoundly affect the racer project. First, Beech had talked with Guy Vaughn, vice president of the Wright Aeronautical Corporation, about providing a more powerful, high-compression version of its R-975 *Whirlwind* radial engine for a special application. Vaughn agreed, and Walter dispatched Rawdon to Wright Aeronautical's manufacturing facilities in Paterson, New Jersey, to discuss modifications to the nine-cylinder powerplant. By changing the supercharger ratio to 10.15:1 and increasing compression ratio to 6.5:1 from 5:1, engineers assured Rawdon that the engine would produce 425 horsepower at 2,500 RPM. It was more power than Herb had dreamed of, but it would come in the form of a bulky, 580-pound radial whose large frontal area presented installation and drag reduction issues he never expected to encounter.

Only 10 weeks remained before the NAR. As materials and component parts began to trickle into the Travel Air factory, Beech selected a secluded corner area of Building C to build Herb Rawdon's racer, now officially designated as the Type "R" monoplane. To keep prying eyes from seeing inside the construction zone, it was enclosed with thick canvas tarpaulins and windows in the walls were frosted. Access to the shop floor was guarded and overall security was maintained at a high level. Early in July, a hand-picked group of 25 workers began building not one, but three racers. Beech had ordered construction of a second racer powered by a Chevolair D-6 in-line engine rated at 250 horsepower, as well as a small biplane fitted with "speed wings" and powered by a Wright J6-7 radial engine.

It was not long before word leaked out to local newspapers that Travel Air was "up to something big" at the factory on East Central Avenue, five miles from downtown Wichita. Reporters hounded the front office for information. They stood on tall ladders in an attempt to see inside Building C but were thwarted by the frosted glass. The *Wichita Eagle* finally concluded that Walter Beech was building a "mystery ship" and those words soon became the unofficial moniker of the airplane (a moniker that persists to this day).

Nor was any information forthcoming inside the factory, as exemplified in the August issue of *Travel Air Currents*, a company publication distributed only to employees and customers: "Funny business is going on around the engineering and experimental departments. Mysterious packages and boxes are being delivered at odd hours, and groups of engineers and workers can be seen huddled here and there holding "skull practice" and immediately dispersing upon the approach of an outsider."

Throughout the hot, humid Kansas summer the team of skilled craftsmen worked long, hard hours to complete Herb Rawdon's racer, and by mid-August the first Type R, registered R614K, was being prepared for its maiden flight. The engine's NACA cowling, however, was still in fabrication but the decision was made to proceed with the first flight and install the cowling later. After a series of engine runs to check operation of the oil, fuel and ignition systems, company test pilot Clarence E. Clark donned his parachute, leather flying helmet and goggles. He lowered himself slowly into the cramped cockpit, adjusted the seat and checked flight and engine controls for proper movement. Mechanics were standing by with fire extinguishers, and Herb Rawdon himself pulled the propeller through a few times to prime the engine for starting. Clarence hollered "Contact," and the propeller swung around once again. The R-975 coughed once, then twice before rumbling to life and



Rawdon and Burnham designed and built the first Type R, registered R614K, on their own time and after normal working hours. Development and construction spanned more than a year, but Walter Beech was thrilled with the results of their time and labor. At last, here was an airplane that Beech believed would beat any ship the United States Army Air Corps and Navy could put in the air. (EDWARD H. PHILLIPS COLLECTION)

settling into an arrhythmic, staccato idle that gently shook the entire airplane.

Clarence gave the signal to pull the chocks. He pushed the throttle forward and the Type R moved under its own power for the first time. Clark taxied to the sod runway nearby and performed a thorough pre-takeoff check. A crowd of factory workers had assembled along with Rawdon, Burnham and Walter Beech. The engine's vital signs looked good, and Clarence slowly added power. The 420-horsepower radial roared in response as the little red racer accelerated like a bullet down the runway. Clarence eased the stick forward to raise the tail, and when indicated airspeed reached about 70 mph he eased back on the stick and the monoplane was airborne. The crowd cheered as the airplane slowly climbed for altitude and disappeared to the east. Clark spent the next 20 minutes probing the ship's flight characteristics before flying back to the factory and landing.

He told Rawdon the ship had attained a maximum indicated airspeed of about 185 without the cowling, and that the airplane handled well and only a few adjustments were required. During the next two weeks the airplane made at least 14 additional flights as Rawdon and Burnham hurried to prepare the Travel Air for the NAR. Finally, the cowling was completed and installed. Much to Rawdon's delight, Clark reported that maximum indicated airspeed had increased to nearly 225 mph. As expected, the cowling provided a significant increase in performance by reducing drag.

Although Clark had been the first to fly the Type R, he would not fly the speedster at the NAR. Instead, Walter Beech tapped Doug Davis, his long-time friend and Travel Air dealer in Atlanta, Georgia, who had extensive experience competing in closed-course air races. At Cleveland, Ohio, site of the 1929 NAR, Walter Beech had made arrangements to "hide" the Type R in a hangar away from the main airfield until after the races had begun. Walter ordered that no one was allowed in the hangar except the small group of company mechanics assigned to prepare the racer for the upcoming competition. News of the "Mystery Ship" quickly spread and during the next few days Beech skillfully worked the press, feeding them tantalizing tidbits of information without revealing details about the airplane.

The NAR, held August 24 through September 2, was well attended throughout the week with thousands of spectators jamming grandstands to witness the more than 40 races scheduled during the show. At that time the NAR was the equivalent of today's Super Bowl extravaganza, and people from all walks of life thronged to Cleveland's Municipal Airport to watch the best of America's pilots and their flying machines battle around the pylons for greenbacks and glory. Walter Beech could have entered the Type R in a number of preliminary events, but he chose to keep the airplane out of sight. The ship did make one brief appearance when Doug Davis took it aloft and performed a mild but impressive aerobatic routine. A news reporter who observed the exhibition noted that, "The machine had such an enormous reserve of power that it seemed to travel in any attitude or direction, including upside down and vertically upward flight, quite normally and under full control."

Except for that one flight, Beech was preserving Rawdon's low-wing warrior for the one race it had been

designed to win – Event Number 26. Scheduled for the last day of the NAR, the 50-mile race was sponsored by Thompson Products, Inc., and would earn the winner $750 and possession of a trophy known as the Thompson Cup. The competition would be tough: The Army Air Corps had entered a modified Curtiss *Hawk* designated the XP-3A, powered by a 450-horsepower Pratt & Whitney R-1340 static, air-cooled radial engine and flown by Captain R.G. Breene. The Navy entered a Curtiss F6C-6 *Hawk* to be flown by Lt. J.J. Clark. The ship was powered by a 12-cylinder, upright V-type Curtiss *Conqueror* D-12 rated at 435 horsepower. In addition to the military machines, the flamboyant Colonel Roscoe Turner would fly his Lockheed *Vega* monoplane that boasted a 450-horsepower Pratt & Whitney *Wasp Junior* radial engine. Beech considered these three ships to be the Travel Air's main competition – the remaining two stood little or no chance of winning. Walter, as well as other pilots at the NAR, believed that Event Number 26 would evolve into a duel between Davis and Captain Breene.

When race day finally came, Davis and the Type R taxied to up at the starting line along with the other five contestants. As Beech and Rawdon watched anxiously from the sidelines, the official dropped the flag. Breene was first to takeoff, followed in 10-second intervals by Davis, Clark, Turner and the others. The ground trembled as engines reached full throttle, and propellers blew thick clouds of dirt and dust upward as each machine struggled to get airborne as quickly as possible. Crowds were on their feet, cheering enthusiastically while waving arms, hats, scarves in wild gestures. The race was on!

Breene had easily jumped into the lead, but as he rounded the first pylon both Clark and Davis already were closing in on the leader. As the laps unfolded, Davis first overtook the Navy biplane and then passed the Army ship as a stunned Breene watched in disbelief. He tried in vain to stay close to the Travel Air but could not hope to match its advantage of speed. Davis slowly opened the gap between his ship and Breene's *Hawk*. With the end of the race rapidly approaching, Doug feared he had turned inside of a pylon – a violation that would have disqualified him. With his heart pounding like a jackhammer, he whipped the Type R into a high-G, 180-degree turn and flew back to circle the pylon. Meanwhile, Breene was fast approaching. In November, he recalled those tense moments during an interview with *The Atlanta Journal*: "Near the end of the race, I thought I had clipped a pylon too closely. I had a long lead over the field, so I figured it would be better to circle the marker again … I pulled on the stick too quickly, and everything went black. By the time my head cleared, I was already past the pylon, so I circled back once more. This time I took a larger curve and made sure I was outside the pylon.

When the Type R arrived at the National Air Races in Cleveland, Ohio, Beech cleverly fueled publicity by having the airplane rolled into a special hangar and covered up to keep prying eyes off the ship. Walter was determined to keep the ship shrouded in mystery until race day, building tremendous anticipation amongst competitors and spectators alike. It was classic Walter Beech.

(EDWARD H. PHILLIPS COLLECTION)

The judges told me after the race [that] I had made a good turn each time."

Fortunately, during the remaining laps Davis managed to stay ahead of Breene and took the checkered flag after flying the race in 14 minutes, five seconds. His fastest lap was flown at 208.69 mph with an average speed for the race of 194.9 mph. Breene easily took second place, finishing more than 30 seconds behind the Travel Air. Turner's Lockheed placed third, while a disappointed Clark had to settle for fourth place. Amid a standing ovation from the crowd, Davis climbed out of the Type R and was escorted to the speaker's platform where he received $750 and the Thompson Cup.[1]

A big grin broke out across Walter Beech's face, and Rawdon was thrilled that his little red racer and its civilian pilot had defeated, in unrestricted competition, the best the Army and Navy had to offer. According to one Travel Air mechanic, no sooner had Davis landed and taxied to the winner's circle than Beech began collecting on wagers he made before the race. "Walter Beech was going around the field taking up everybody's bet. He had a wad of bills that would choke a mule, and he was really happy. I imagine he probably made more than $60,000 on those bets." That amount may be wishful thinking, but Walter did share his winnings by handing out $100 bills to mechanics and other Travel Air personnel.

In less than 15 minutes that day in Cleveland, the brainchild of Herbert Rawdon and Walter Burnham had become an instant icon in American air racing. The monoplane was a testimony to their design genius and guaranteed both men a well-deserved place in aviation history. More importantly, however, the Type R's success signaled the birth of a new and exciting era in the design of both commercial and military airplanes. Doug Davis summed up the racer's impact on aviation this way: "She's a great little ship."[2] KA

NOTES:

1. In 1929, the National Aeronautic Association (NAA) granted Charles Erwin Thompson's request to offer a permanent trophy each year to the winner of the Free-For-All event at the NAR. The trophy, 40 inches tall, was made of gold and silver and mounted on a marble base. It was fashioned as a representation of the mythological Icarus. A cast model of each year's winning airplane was attached to the top of the trophy. The beginning of World War II in 1939 brought an end to the NAR, but the races resumed in 1946.
2. Davis was killed during the Thompson Trophy Race at the 1934 NAR. The Wedell-Williams racer he was flying was observed to spin out of control and dive nose-first into the ground after rounding the second pylon. The probable cause of the accident was never determined.

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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Western Aircraft named Authorized Service Facility for King Air

Western Aircraft, Inc. of Boise, Idaho announced that Textron Aviation Inc. has designated it as an authorized service facility for several models across the Beechcraft and Cessna platforms, including the King Air 90 series, King Air 200/250 series, and King Air 300/350 series aircraft.

In addition to the Authorized Service Facility designation, Western Aircraft has also been named a Textron Aviation Spare Parts Reseller. The agreement includes parts for all models of aircraft designed, manufactured and marketed by Textron Aviation under the tradenames and trademark of "Beechcraft" "Cessna" and "Hawker" aircraft.

Blackhawk Announces Updates for the King Air 350 XP67A ENGINE+ UPGRADE

Blackhawk Modifications, Inc. released progress updates for their new King Air 350 XP67A ENGINE+ UPGRADE program in an announcement from company officials. The program charges forward after the submission of the Federal Aviation Administration (FAA) flight test plan, and FAA flight testing will begin once approval has been received. Blackhawk anticipates testing to begin in November, and the finalized STC to be received in May of 2017.

The Supplemental Type Certificate (STC) in development by Blackhawk will allow the installation and operation of the Pratt & Whitney Canada PT6A-67A 1200 SHP engine to replace the factory standard PT6A-60A 1050 SHP engines on the King Air 350 model. The higher horsepower engine will require a more robust propeller assembly than what the PT6A-60A currently turns. Working closely with MT Propeller, the companies have developed a migration path. If a King Air 350 has the five blade composite propellers currently installed, MT has agreed to exchange the hubs and spinners to ensure compatibility with the PT6A-67A engines for a small fee. They will also reset the propeller warranty to two years in order to provide coverage for XP67A operators.

Performance results continue to exceed expectations. In hot climate conditions, the XP67A will climb from sea level to its service ceiling of FL350 in as little as 18 minutes, whereas stock engines will take 45 minutes to make the same climb. Typical cruise speeds are increased by up to 37 KTAS and can settle in at up to 340 KTAS if an operator chooses to fly at maximum engine power limits. Operators looking for increased endurance and range can throttle back and extend capabilities due to better specific fuel consumption ratings.

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

A worldwide network of approved dealers and service support centers complements Blackhawk's U.S. facilities, including recently added Hampton Aviation located in western Arkansas. For more information, visit *www.blackhawk.aero*.

Fusion-equipped Beechcraft King Air models certified in Brazil

Beechcraft Corporation, a subsidiary of Textron Aviation Inc., announced it has received certification from Brazil's Agência Nacional de Aviação Civil (ANAC) for its line of Pro Line Fusion-equipped Beechcraft King Air turboprop aircraft with cabin enhancements. Deliveries into the Latin American region are imminent, beginning with a King Air 250.

Pro Line Fusion avionics systems are standard equipment on all current production models of the King Air: King Air C90GTx, King Air 250 and King Air 350i/ER.

According to the company, Pro Line Fusion for the King Air brings one of the most trusted avionics architectures to the first full touch-screen flight display system. The new avionics system changes how operators fly through a one-of-a-kind intuitive flight deck interface. Its three 14-inch displays are interchangeable, high-resolution and touch controlled. Other performance-enhancing capabilities include:

- Integrated touch-screen checklists
- Intuitive graphical touch-screen flight planning
- High-resolution Synthetic Vision System (SVS) with patented airport dome graphics
- Convenient presets to reconfigure all three displays with a single touch
- Dual multi-sensor flight management system
- Available automatic wireless database and chart uploads
- Open and scalable architecture for future upgrades and mandates

Jeppesen Previews SID/STAR Charts Improvements

Jeppesen recently gave a preview of changes to the company's SID (standard instrument departure) and STAR (standard terminal arrival route) charts. According to the company, the improvements, which have been in the works for the past two years, are intended to help enhance pilots' situational awareness.

The redesign process included input from pilots and human factors experts, as well as incorporating best practices and real-world operational environment factors. Improvements to the charts include introducing colors to identify what pilots consider to be the most pertinent information. For example, altitude restrictions will be in blue, while airspeed restrictions will be in magenta.

The new chart design also incorporates graphics for key topographic features, such as a blue tint for water and shaded areas for mountains. In addition, flight procedures on STARs and SIDs will be shown to scale to improve situational awareness. It also enables use of an "own ship" symbol when connected to a GPS.

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

AvFab Receives STC Approval On King Air ISR Operator Seat

Aviation Fabricators (AvFab) announced they have received Supplemental Type Certificate (STC) approval for the installation of their Beechcraft King Air ISR (Intelligence/Surveillance/Reconnaissance)

Operator Seat for a variety of 90, 100, 200, 300/350 series model King Airs from the Federal Aviation Administration (FAA).

AvFab's King Air Operator Seat provides operator comfort from design features that include vertical seat adjustment of three inches, a five-point restraint system, stowable armrests, and fore-aft floor tracking controlled via a convenient hand lever. The proven design is well-suited for the demanding requirements of any Special Missions ISR theater, weighing only 29.0 lbs. (31.0 lbs. with optional upholstery and armrests). AvFab officials point to the short lead-times their production lines will support with this newly approved operator seat, due to the urgent requirements that often exist in the ISR market.

For more information on this or any other product or service offered by AvFab, please visit their websites at *www.avfab.com* or call (660) 885-8317.

ADVERTISING INDEX

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