King Air

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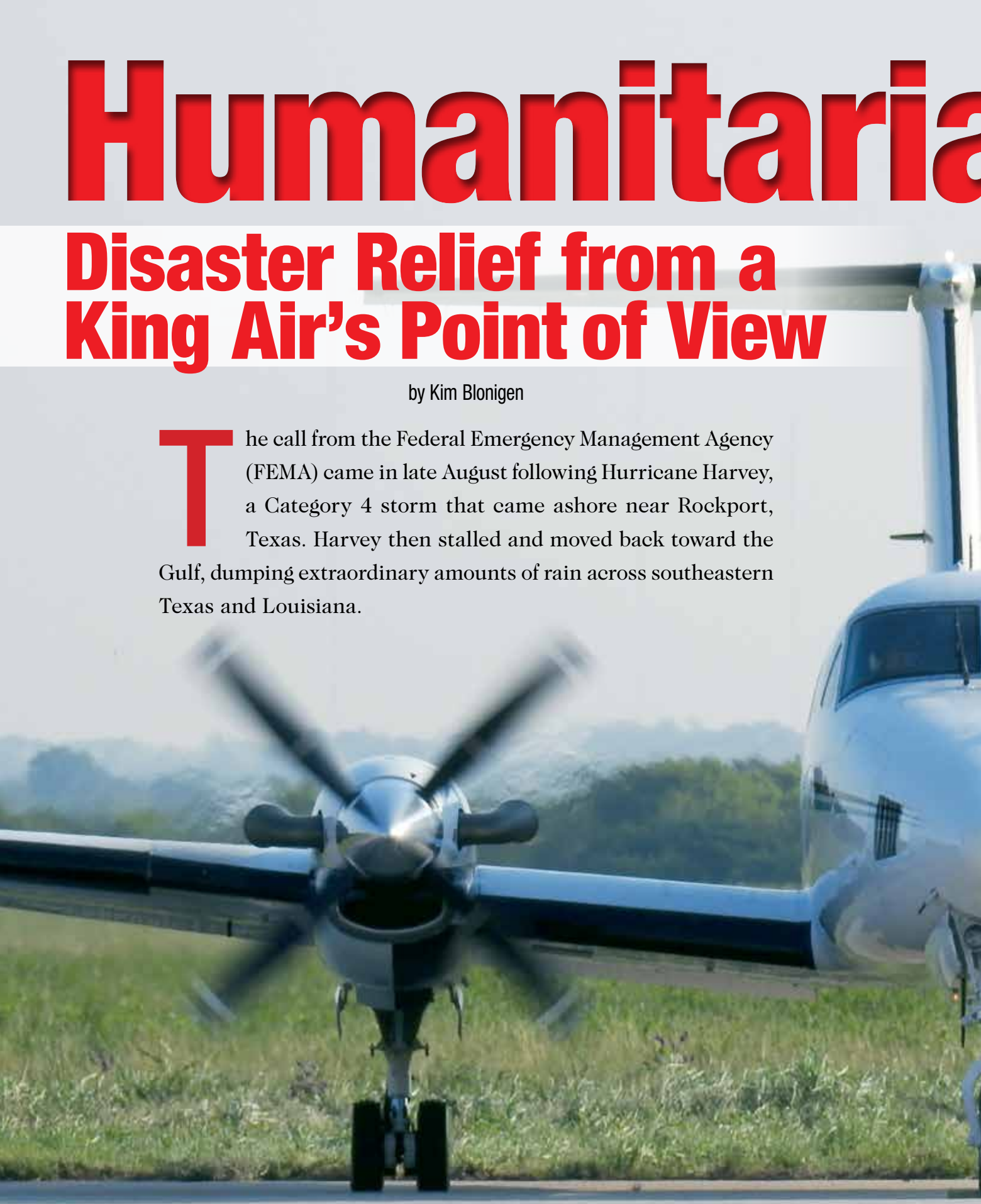
Humanitaria

Disaster Relief from a King Air's Point of View

by Kim Blonigen

The call from the Federal Emergency Management Agency (FEMA) came in late August following Hurricane Harvey, a Category 4 storm that came ashore near Rockport, Texas. Harvey then stalled and moved back toward the Gulf, dumping extraordinary amounts of rain across southeastern Texas and Louisiana.



King Air B200 N209CM prepares to launch from Temple for a transport out of hurricane-ravaged Beaumont, Texas.

an Hero

Satellite image of Hurricane Harvey near the coast of Texas at peak intensity late on August 25, 2017.
(Source: NOAA satellite RAMMB/CIRC SLIDER)

Loading the medical equipment needed for the FEMA mobilization order in support of Hurricane Harvey.

Flooded communities and roads in Beaumont, Texas.

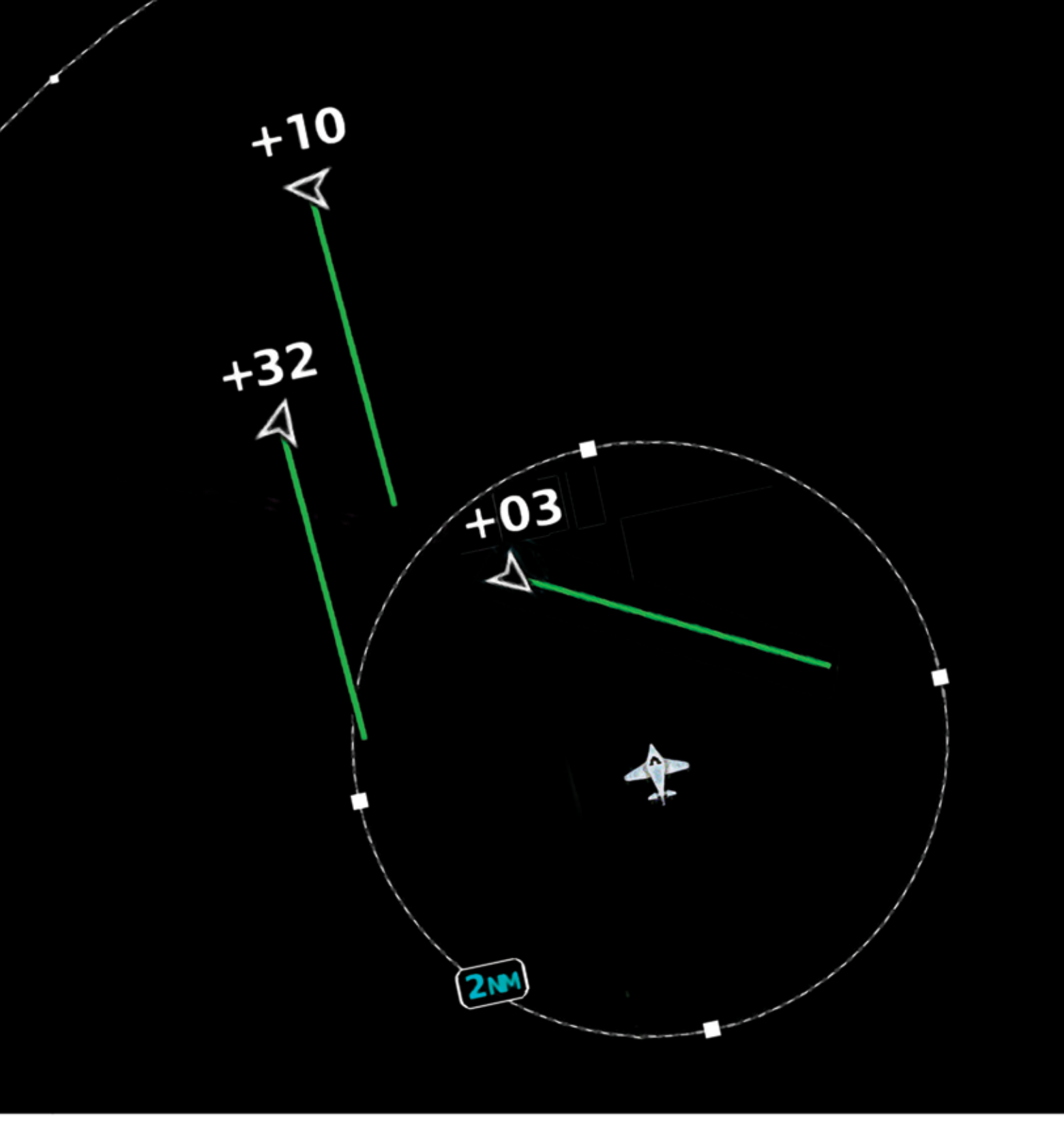
N209CM parking back on the flight line at Temple after a rescue flight.

Air ambulance teams from across the country were called on, via the FEMA mobilization order, to move both fixed-wing and rotor equipment, supplies and staffing to southeast Texas. FEMA had requested two aircraft from North Carolina-based MedCenter Air, each with isolette capability for neonatal patients. The aircraft with those capabilities would be MedCenter's Beechcraft King Air B200 (N209CM), as well as a Cessna Citation Ultra. Each aircraft would be staffed by two pilots and medical crew for day and night shifts which totaled 16 people. Also accompanying the two requested aircraft was the organization's other King Air B200 (N207CM) to transport additional equipment and crew.

The base of operations for this humanitarian effort would be the airfield in Temple, Texas, which was located far enough from the disaster zone not to be a burden on the immediate disaster area, but close enough to the facilities and patients the aircraft were sent to support. Arriving at the FEMA-managed fleet ramp, the massive hangar was busy with other arriving aircraft, equipment, medical crews and pilots. The first line of business was filling out government paperwork to get the aircraft and crews registered with FEMA. After N207CM unloaded some of the crew and equipment, it headed back to MedCenter's home base. The other two aircraft were parked in preparation for their duty to start the next day. The crews were divided into 12-hour day/night shifts for each aircraft and they all went to check into the hotel to get rest before their shifts started.

FEMA had quite a job working out the logistics of matching the evacuation needs of the hospitals and care facilities with which air ambulance would fit the mission for each of those flights. Over the next week, N209CM would engage in flying medical evacuation missions and personnel transports, combined with light cargo

Crews were required to be at the airport for the duration of their 12-hour shift, so the hangars became their hangout and walking the flight line at night became a regular leg stretching exercise while waiting on a call.



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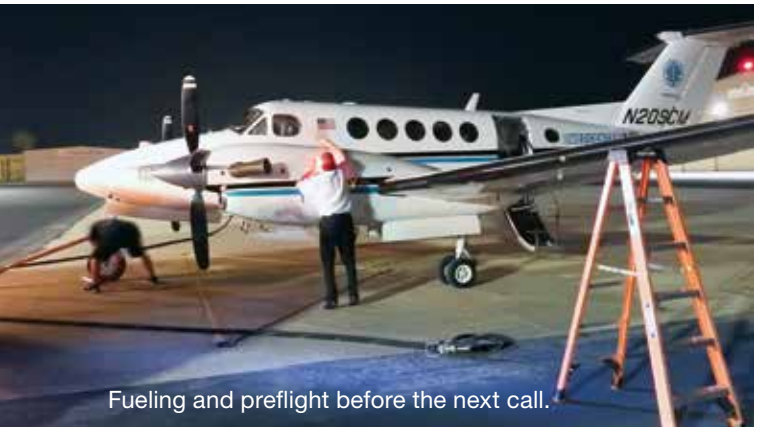
MedCenter Air's pilots at shift change getting those coming on duty up to speed on operations.



Fueling and preflight before the next call.

carrying. The crisis in Beaumont, Texas, eventually took top priority as the city was flooded with water, but had no clean water to drink, which required the mass evacuation of all patients from hospitals in that area.

Operations from the FEMA base in Temple were described by MedCenter Air's Pilot Chris Frishmuth as "impressive, as dozens of aircraft from around the country were assembled and dispatched from the airfield." Aircraft were usually pushed in waves from Temple to Beaumont, where they would wait – sometimes a few minutes, other times, hours – for patients to be evacuated. The medical crews had to be flexible and adapt as oftentimes they had little or no idea of what type of patient, and their medical needs, would be showing up at the aircraft. Assessments were made on the fly, but handled "with their typical professional calm," described Frishmuth. The overall state at Beaumont was described as "organized chaos" with fixed-wing airplanes, dozens of helicopters, including military aircraft of all types running around the airspace on a multitude of missions. ATC and communications were generally very good in Texas, unlike what this team would face later in Puerto Rico.

During the Harvey deployment, there was a unique challenge for the MedCenter Air crews – the odd shift schedules that were required. Day pilots were assigned a shift from 2 p.m. to 2 a.m., while the night shift was on duty from 2 a.m. to 2 p.m. So there was really no *true* day or night shift since a good bit of time was spent during both, and finding rest during the off times was a bit of a challenge. During each shift, the crews working were required to be at the airfield, resting on cots in the hangars and finding ways to pass the time until their aircraft got called up for a mission. During shift change, the previous crew would get those coming on call caught up on operational notes and discuss the events that happened during the shift.

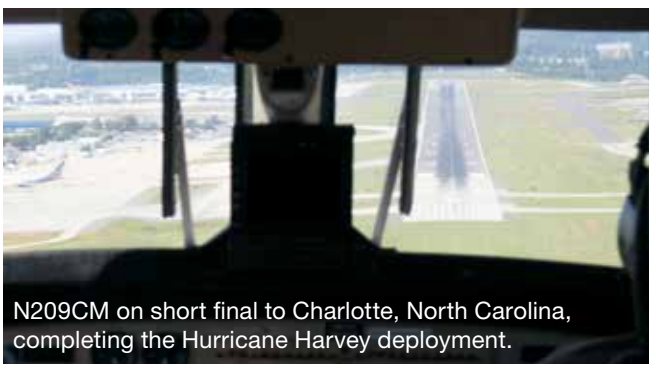
About MedCenter Air

MedCenter Air is based out of Charlotte, North Carolina, and provides emergency and critical care patient transport services for the Carolinas HealthCare System with a fleet of fixed-wing aircraft, helicopters and ambulances. The fixed-wing aircraft are operated by Sterling Aviation, LLC, a Texas-based company that manages several medical transport aircraft.

MedCenter Air offers national and international transport through four fixed-wing aircraft – two Beechcraft King Air B200s and two Cessna Citations. The aircraft are equipped with advanced medical equipment including cardiac monitors, ventilators, multiple IV infusion pumps, advanced drug therapies and an intra-aortic balloon pump.

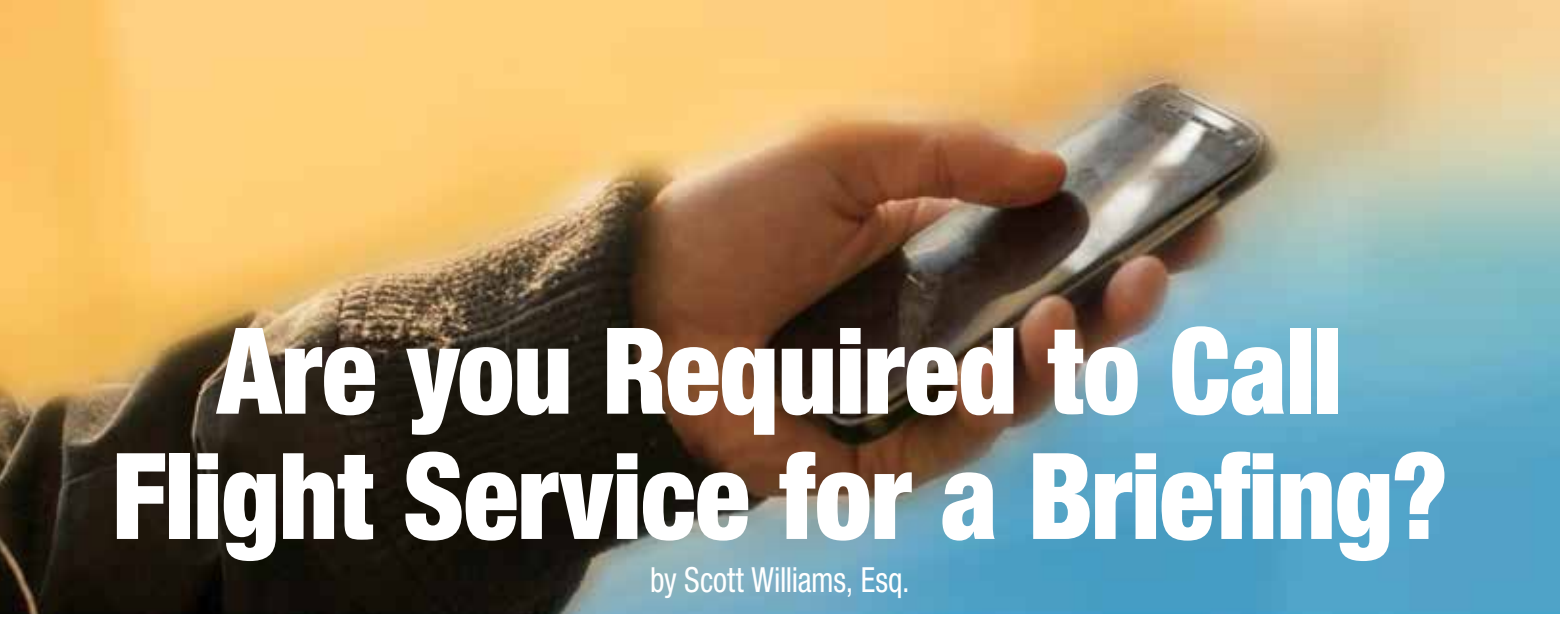
Medical staff and pilots are available 24 hours a day for emergencies and scheduled patient transports. Pilots are provided by Sterling Aviation, LLC and two pilots are scheduled for every flight for safety. Pilots are highly experienced and are required to have an FAA Airline Transport Pilot (ATP) Certificate, more than 2,000 hours of previous flight time, an FAA first-class annual flight physical and attend annual recurrent training, including flight simulation. The highly qualified medical crew must also meet rigorous requirements for their field.

The aircraft are also used for organ transplant transfers and transportation.


N209CM on short final to Charlotte, North Carolina, completing the Hurricane Harvey deployment.

MedCenter Air's maintenance team supported the aircraft from afar as the aircraft flew many hours on its humanitarian missions. There was 100 percent reliability and dispatch rate for the aircraft. After a week in Temple, the air ambulance teams were deactivated by FEMA and the medical crew, pilots and aircraft returned to MedCenter Air's home base of Charlotte … and would do it all over again a few weeks later in Puerto Rico. KA

Thank you to pilot Chris Frishmuth for allowing us to pull information from his blog and use his photos for this article.



Are you Required to Call Flight Service for a Briefing?

by Scott Williams, Esq.

With the proliferation of Electronic Flight Bags (EFBs), fewer and fewer pilots are calling Flight Service for a telephonic briefing. The question remains: Are pilots required to call Flight Service to be compliant with FAR 91.103? Reluctantly, the FAA has finally said, "No."

"Official" Briefing Source?

Before EFBs, pilots had little choice but to call Flight Service. It was the only reliable weather and airspace briefing readily available. As a result, some FAA officials have developed the informal position that Flight Service was the only *official* briefing source. In 2015, one FAA enforcement attorney took this position too far. A pilot (represented by this author) obtained a briefing using ForeFlight, but unfortunately did not set up DUATS which would have provided a record of the briefing emailed to them. ForeFlight depicted two Vice Presidential TFRs on its screen (which the pilot avoided), but not a third (which the pilot flew right through). In addition to citing the pilot for violating FAR 91.141 (busting a TFR), the FAA also cited the pilot for FAR 91.103 (failure to obtain a proper pre-flight briefing).

FAR 91.103 states, in part:

§91.103 Preflight action.

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include –

a) *For a flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;*

The FAA was hinging its 91.103 violation on two factors:

a) The first sentence of the regulation says: "… all available information…"; and

b) Only Flight Service (known back then as Lockheed-Martin Flight Service (LMFS)) was the government's "official" briefing source.

Leading up to this 2015 enforcement case, the FAA had routinely taken the position that, if a pilot received a briefing from Flight Service, and if Flight Service had failed to brief the pilot about a particular TFR, then the FAA would not pursue an enforcement action for violating that TFR. This doctrine is known as the affirmative defense of "reasonable reliance."

In this case, the FAA refused to dismiss the action on the defense of reasonable reliance since the pilot obtained his briefing from ForeFlight instead of Flight Service. Ironically, the FAA stopped short of calling ForeFlight "unofficial" or "unreliable."

The FAA Folds its Enforcement Case

In the weeks leading up to the 2015 NTSB hearing (in front of an Administrative Law Judge), our team designated an expert witness who was prepared to testify:

a) Fewer pilots are calling LMFS and most are instead relying upon EFBs;

b) FAR 91.103 does not mention any "official" briefing source, and the FAA has no authority to designate it as such;

c) LMFS didn't even brief pilots about TFRs over major sporting events, and instead expected pilots to search the Internet for sports schedules and stadium seating capacity (Note: most EFBs **do** brief this information).

Faced with a case they were not certain they could win, and not happy with the prospect of having this case cited as binding authority, the FAA settled its 2015 enforcement case against this pilot for a few hours of remedial training.

No violation went on his record. In case you are wondering, this pilot did file a NASA (Aviation Safety Reporting System) Report in a timely manner, but that only stays the certificate suspension. The violation itself

would still have gone on his record, which could have torpedoed his intended professional pilot career.

The "Opinion Letter" 19 Months Later

As a result of this case, this author submitted a request for an Opinion Letter from the FAA's Office of Chief Counsel as to 91.103. The letter specifically asked three questions:

1) Is a preflight briefing in violation of FAR 91.103 if it did not include a phone call to Lockheed Martin Flight Service?
2) If a pilot obtains a preflight briefing from the FAA's website: *http://tfr.faa.gov/tfr_map_ims/html/index.html* it contains a disclaimer at the bottom of the page: *"For the Latest Information Call Your Local Flight Service Station at 1-800-WXBRIEF."* Is that disclaimer advisory or regulatory?
3) Does the FAA consider a briefing using only an electronic flight bag to be in violation of 91.103?

The request was submitted in November 2015, and a generic response suggested an Opinion Letter would be issued in about May 2016. Six months after that, still nothing. After several emails to senior FAA managers, we were told in January 2017 "it's in final review." Five months after that, the FAA's letter (relabeled by them as a "request for compliance assistance") was finally released. The answers:

1) "A PIC's failure to contact LMFS prior to a flight would not be a per se violation of FAR 91.103."
2) "The statement at the bottom of the FAA's TFR website (to call your local FSS) is advisory."
3) "A PIC's reliance on only an EFB would not be a per se violation of FAR 91.103."

Should Pilots Still Call Flight Service?

Pilots should always obtain a weather and airspace briefing from a reliable source. Most EFBs are fine, but merely looking at a screen on a tablet isn't good enough. If that screen was missing a TFR and you fly through it, don't expect the FAA to believe that you saw what wasn't there. To be safe, pilots should use EFBs that have a feature that will email you a copy of the full briefing. Keep those emails for at least six months. If that doesn't work for you, make the phone call to Flight Service, which puts your briefing on the record. KA

Scott Williams, Esq. represents buyers and sellers in aircraft transactions, and provides FAA certificate enforcement defense to all pilots. He is a panel attorney for AOPA's Pilot Protection Services. He has owned his 2006 Cirrus SR20 since new, and is currently serving on the Cirrus Operators and Pilots Association Board of Directors as vice president.

Things to Ponder When Considering a New Paint Job

by Dean Benedict, A&P, AI

Thinking of having your King Air painted? No doubt the first thing that comes to mind is the cost. New paint is pricey, and you'll want to shop around. For a 90 series King Air you could see quotes ranging from $25,000 to $50,000, or more. With bigger aircraft and custom paint schemes, it only goes up from there.

Before you start salivating over paint colors and design, you need to get down to the nitty-gritty. Get several quotes, which may vary immensely in price and what it covers. You're going to have to dig into the quotes to get an apples-to-apples comparison.

Comparing Quotes

First off, determine what exactly is being stripped and painted. Are they painting the gear? What about the wheel wells and flap wells? Do they pressure wash and paint over certain areas or do they strip and paint *everything?* You need to know.

How much time do they allow for a basic paint job on your type of aircraft? Does the quote detail the preparation steps and materials used? You don't want a shop that cuts corners, and you don't want to be taken to the cleaners.

I've seen a lot of King Airs in my day – some with great paint, others not so much. Below, are a few topics for you to keep in mind regarding a new paint job.

Stripping

A King Air will always be stripped before repainting. This can be done with media blast (such as glass beads or walnut shell particles), chemical strippers, or in certain circumstances, sanding. Chemical strippers are the most common choice.

Careful masking of everything not being stripped and painted is just one of the time-consuming parts of the job. Chemical strippers destroy plastic and rubber. Windows, light lenses, beacons, boots, seals and tires will be ruined if they come in contact with stripper. Antennas have a protective coating that is destroyed by strippers. All these items must be well protected.

Chemical strippers are highly corrosive, so they must be cleaned off after they've done their job. Close attention must be paid to getting stripper out of every crack and crevice where it may have seeped, such as skin laps and inspection panels.

I recently heard about a B200 with a lot of problems following the installation of a G-1000 panel. They double-checked and triple-checked everything to no avail. A great deal of time was spent chasing the problems. Ultimately, they found corroded skin under the antennas, and guess what? That airplane had been recently painted. Apparently, stripper seeped into the antenna bases and compromised their bond. Careful masking should have prevented this.

Prep and Prime

After stripping and cleaning, bare aluminum needs protection against corrosion. For decades, zinc chromate primer, that ubiquitous yellow-green coating found on the innards of every airplane, was the way to go. When chromates were deemed a health hazard, zinc phosphate became popular. It looks exactly like zinc chromate, so all

During the paint stripping process (left) and after all the paint has been stripped off (right).

Prepping the areas on the aluminum skin that were less than perfect, by adding filler and then smoothing it out by sanding.

Applying the base coat is nearly complete; Matterhorn White is a frequent choice. The wing lockers, cowlings, panels and grates are removed and painted separately.

of us old-timers keep referring to it as that. Alodining is another anti-corrosion option. Some shops offer alodining as a "pre-treatment" before the primer.

The world of aircraft paint systems has advanced dramatically from the old days of zinc chromate. Now there are pre-treatments, multi-step primer systems, adhesion enhancers, etc., and we haven't even discussed paint yet.

Surface preparation is a crucial aspect of any paint job – aircraft painting is certainly no exception. Before or during priming, minor dents or skin distortions are smoothed out with filler and sanded. Although power sanders are often employed, I'm a stickler for sanding by hand whenever possible. The use of power sanders on an airplane make me cringe.

I'll never forget the King Air that came to my shop for a routine phase inspection. As the owner pointed out his new N-number, I happened to notice some button-head rivets missing. I looked a little closer and saw that every rivet in the N-number area was shorn down flush with the skin! Apparently, the shop that performed the work used a power sander when they shouldn't have. Needless to say, it was an expensive squawk to remedy. Every rivet had to be replaced and each button-head meticulously re-touched with paint. King Airs are loaded with button-head rivets.

Control Surfaces and Flaps

The ailerons, elevators and rudder are removed and painted separately. They are re-balanced in accordance with the maintenance manual, then reinstalled on the aircraft. Failure to balance a control surface per the manual can result in flutter during flight. If the flutter is extreme, the whole thing can rip off.

Flaps are another story. Some paint shops remove them, others do not. I feel strongly that flaps should be removed for paint. When they are left on the wing, stripper can seep into areas that are impossible to clean. Where stripper sits, corrosion develops. In this case, the flap bearings and washers are at risk; and when they go bad, the flap tracks are the next to go. Flap tracks are nothing to mess with. If I had a King Air being painted, I'd insist the flaps be removed.

Post-paint Inspection

Don't be in a hurry to pick up your King Air from the paint shop. Take at least a half-day to look closely at everything. Check for drips, fish eye, gaps and overspray. Minor blemishes and flaws can be remedied, but hopefully there are no such issues. If possible, bring your mechanic along to verify the control surfaces have been balanced per the manual. It behooves you to have someone double check their figures.

The aircraft after it has been primed and ready for the paint process.

The layout of a design is underway. The rudder has been re-attached to achieve continuity in the arcing stripe on the tail.

Extensive masking is required to apply a color over the base coat. The rudder is still on, but will be removed later, balanced per the maintenance manual and reinstalled before the aircraft is delivered to the customer.

Years ago, one of my customers was picking up his C90 after a new paint job. He got into the cockpit and noticed that both airspeeds were stuck at around 80 knots. He checked the pitot tubes and they looked fine – they weren't covered or blocked in any way. So he gave me a call and we hatched a plan.

The next day, he flew to my shop in another aircraft. I grabbed a spare airspeed indicator, and together, we flew to the paint facility. I installed my spare airspeed on one side and did a quick static pitot test to verify everything was good. The goal was to get this King Air to my shop to fix the other side. As I chatted with the paint shop staff, I discovered they used a blow gun to remove the dust. It seems their guy blew directly into the pitot tubes; that explained the airspeeds.

Then I began to wonder about other things. I asked to see what maintenance manual they used for control surface balancing. They showed me an F90 manual. Needless to say, this C90 did not leave the paint shop that day. They had to pull all the control surfaces back off, balance them per the C90 manual, and reinstall them yet again. Eventually we got it over to my shop, had the airspeeds repaired, and all was well.

Fortunately, the owner of the paint shop took this one on the chin. He used this incident as a learning lesson for all his guys and ultimately took his business to the next level. In the years following, he called me many times with King Air questions and I was happy to help.

Level the Playing Field

Most paint shops will give you a generic quote. But, as you can see, it is vital that you delve into these quotes to flush out their differences. You're trying to get them all on the same page, for a true apples-to-apples comparison. Once you start adding design features (colors, stripes, ribbons, fades, custom logos, and more), sticker shock will soon set in!

Screws – Pay Now or Pay Later

With new paint, there's one more thing to consider – your screws. What happens to your gorgeous, pristine "virgin" paint job at the next phase inspection? Mechanics with pointed tools open up access panels for inspection and repair. There are many, many panels and each one takes anywhere from six to 20 screws. That's a lot of screws, *and every one of those screws has been painted over.*

Your new, fresh paint job has essentially sealed every screw in place. As these screws are removed for the first time since being painted, the paint around the screw head twists, tears and chips away. The thicker the paint, the bigger the problem. I've seen paint so thick I could barely make out the screwdriver slots.

Applying one of the colors. Each time a different color is applied, all else must be masked off.

It's a heartbreaking situation for the maintenance shop. There is only so much one can do to minimize the damage. Paint cutters are a good start. Tool sets are available to cut the paint around various sized screws. It's very time consuming, and it's not included in the flat-rate for the phase inspection, but it's much better than taking no action at all. Cutting the paint around every screw is the "pay later" option.

You can avoid this situation altogether by planning ahead before you paint the airplane. These are the "pay now" options. One is to have the paint shop back out

A paint job near the finish line, and a King Air that looks new again.

every screw a couple turns before painting the aircraft. After the paint has cured, the screws are screwed all the way in. The paint around the screw heads won't chip when the screw is removed for maintenance, and it's a much cleaner look than a paint cutter could provide.

The other option is to have the paint shop install stainless steel screws after paint. The advantages to stainless hardware are many: Nothing is painted over; paint around the screws does not chip; there's no paint to chip off the screw head itself; and the screw head will never rust. This is my preference. Plus, I like the finished look of stainless hardware.

Many designers prefer painted screw heads for the smooth and seamless look. They feel this showcases their design to its maximum potential. But the designer isn't around after five, 10 or 15 years to see what the painted hardware looks like after the wear and tear of required maintenance. It's something to consider carefully.

Stainless steel screws have one minor downside. They must be treated properly. You cannot use a power screw driver and run these screws in with one shot. A stainless screw gets hot very rapidly, so if screwed in too quickly, it will gall in its receptacle. This is easily avoided by running the screw in with several short bursts. Otherwise you have the laborious task of drilling out the screw, and tapping or replacing the receptacle. Good mechanics know how to deal with stainless steel screws.

It's a Big Job

Painting an airplane is very labor-intensive. It's hard to imagine the scope of work involved until you see it first-hand. The photos in this article were taken of a variety of King Air paint jobs, and should illustrate the complexity of painting a cabin class aircraft.

Colorful paint schemes and clever designs may fall into the realm of decoration, but every step of a paint job, up through the base coat, is really required protection for the aluminum skin of your aircraft. When it's time to re-paint your King Air, choose wisely and allow time. KA

All photos courtesy of Master Aircraft Services in Wickenburg, Arizona. For more information visit www.masteraircraftservicesinc.com *or call Gus Haussler at (928) 684-4926.*

Dean Benedict is a certified A&P, AI with over 40 years' experience in King Air maintenance. He's the founder and former owner of Honest Air Inc., a "King Air maintenance boutique" (with some Dukes and Barons on the side). In his new venture, BeechMedic LLC, Dean consults with King Air owners and operators on all things King Air related: maintenance, troubleshooting, pre-buys, etc. He can be reached at *dr.dean@beechmedic.com* or (702) 773-1800.

The Latest in Aviation News

by Kim Blonigen

NBAA Asks FAA to Pause on Proposed IAP Cancellations

Considering recent flight management system (FMS) software glitches that required FMS manufacturers to pull thousands of approaches from their databases, the National Business Aviation Association (NBAA) is asking the FAA to "hit the pause button" on implementation of its proposed policy on cancellation of certain instrument approach procedures (IAPs) – specifically circling approaches and circling approach minima. In one of these database issues, one manufacturer had to temporarily remove more than 10,000 IAPs in its database.

In the summary of Docket No. FAA-2017-0879, the FAA explained the need to cancel certain approaches. "As new technology facilitates the introduction of more area navigation (RNAV) instrument approach procedures over the past decade, the number of procedures available in the National Airspace System has nearly doubled. The complexity and cost to the FAA of maintaining the IAP inventory while expanding the new RNAV capability is not sustainable."

"While NBAA generally supports the establishment of the proposed evaluation criteria for IAP cancellations," said Heidi Williams, NBAA's director of air traffic services and infrastructure, "several significant issues with FMSs and navigation databases have surfaced since the industry originally provided recommendations to the FAA. This has prompted the need for further evaluation prior to the implementation of any policy changes or IAP cancellations to ensure we don't cancel thousands of IAPs that could result in the loss of all-weather access during one of these glitches."

Williams said NBAA wants the FAA to move forward cautiously. "Because the RTCA's Tactical Operations Committee (TOC) did not assess FMS issues when they looked at providing IAP cancellation recommendations, we would like the FAA to task that body to take another look at the recent database issues to determine how they factor them into establishing approach cancellation criteria," she said.

NBAA is sensitive to the issue of the FAA having to maintain thousands of IAPs if they truly are not necessary. In submitted comments, the association is asking FAA officials to increase their due diligence by allowing the TOC to consider the impacts of these database events and offer additional inputs to the FAA before making policy changes that could negatively affect thousands of aircraft operators.

DOT Adds Opioids to Drug Testing Rules

Based on a Department of Transportation (DOT) notice of proposed rulemaking (NPRM) dated January 23, 2017, the department recently released its final rule that four opioids will be added to the DOT's drug-testing requirements for specified flying and ground personnel. Under the new rule, drug tests of covered personnel must include hydrocodone, hydromorphone, oxymorphone and oxycodone, in addition to the drugs for which testing is already required: marijuana, cocaine, amphetamines and phencyclidine (PCP).

Also adopted is clarification of certain existing drug-testing program provisions and definitions, technical amendments, and the removal of the requirement for employers and consortium/third-party administrators to submit blind specimens.

"Opioid abuse and related problems are a major national concern," the DOT said. "Consequently, the department proposed including these substances in its testing panel, not only for consistency with HHS (Health and Human Services) Mandatory Guidelines, but as a response to a national problem that can affect transportation safety."

The new ruling will take effect on January 1, 2018.

FAA Issues AC to Allow Own-Ship Display on EFB Apps

The Federal Aviation Association (FAA) recently issued Advisory Circular (AC) No. 120-76D which now supports the use of geo-referencing or own-ship position display while using moving map features in the air. The AC replaced the "C" version issued in 2014, and the FAA said it "is removing its previous prohibition on the display of aircraft location during flight on various EFB applications."

The new guidance applies to Part 91, 91K, 121, 125 and 135 operators, but only 91K through 135 operators are required to seek FAA approval of their EFB programs. Part 91 operators can use EFBs as they wish, without formal approval. Also, operators will be able to make changes to their EFB programs without contacting their FAA principal inspector, according to the FAA. Previously, if an operator wanted to use a new feature in an updated version of the app, then coordination with the principal inspector was required.

The FAA said that the new policy eliminates all guidance associated with EFB classification, clarifies the definition of an EFB (a device displaying EFB applications) and reorganizes EFB application software types according to safety importance.

DOT to Audit FAA's SENSR Program

The U.S. DOT (Department of Transportation) Office of Inspector General (IG) issued an Audit Announcement of the status of the Federal Aviation Administration's (FAA) Spectrum Efficient National Surveillance Radar (SENSR) program. The SENSR program is a cross-agency, multibillion-dollar infrastructure project intended to modernize aging weather and aircraft surveillance radar systems.

The FAA is partnering with the National Oceanic and Atmospheric Administration, the Department of Defense and the Department of Homeland Security, and will lead the efforts to assess the feasibility of acquiring new surveillance solutions. The FAA plans for funding for the development and deployment of new radars to be through the Spectrum Pipeline Act of 2015, which permits federal agencies to auction off government electromagnetic spectrum equipment and use the proceeds to fund new infrastructure.

The DOT IG stated that given the significant investment, coordination and development efforts to procure, test and implement a new national air and weather surveillance system, the House Committee on Appropriations directed their agency to examine the program. The IG stated, "Accordingly, our audit objectives are to assess (1) the FAA's actions to leverage work conducted by other agencies to reduce development costs and risks for SENSR; and (2) how the FAA plans to integrate SENSR into NextGen and the NAS." KA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Parking Brake…Yay or Nay?

by Tom Clements

Do you use your King Air's parking brake regularly? I surely do, but I have observed that quite a few King Air pilots do not. Why?

I believe that the reluctance to use the parking brake comes from our first training flights, such as in a Cessna 172. "Don't use that. It's unreliable and doesn't work very well," was what we usually heard from our instructor. And you know what? He or she was probably correct! These primitive systems in which the parking brake knob merely pulled up on a spring clip designed to hold the pilot's brake master cylinder rods under the rudder pedals in the depressed position were indeed iffy at best.

I think it is unfortunate, however, that too many King Air pilots have not evolved in their understanding and trust of parking brakes. Take my word for it: They're quite good!

Remember how I have preached often about the benefit of "Judicious Suspicion?" That's the opposite of complacency and the feeling that "It won't happen to me." Instead, it's the knowledge that "Today's the day that there *will* be traffic nearby when I look over my shoulder before turning." Or, "Today's the day that the oil pressure will *not* be in the green arc." And, "Today's the day that I *will* enter the wrong waypoint into the GPS's flight plan."

Well, Judicious Suspicion leads us to never trust a parking brake completely. It is certainly wise to stay alert for unexpected airplane movement and to not spend much time without at least one crewmember looking out the window. Yet in most cases the parking brake, when properly used, will prevent undesired ground motion even under the most severe conditions. Let me explain.

Yes, there are variations in the parking brake system – as I will discuss later in this article – between different models and different years of King Air production but they all share some commonality. The knob on the subpanel, in all King Airs, is connected to two (left and right) fluid check valves. When the knob is in the Off position, the valves act as if they don't exist. They allow the hydraulic brake fluid to freely flow in either direction: From the master cylinders in the cockpit *to* the wheel caliper to apply the brakes, and *from* the calipers back into the master cylinders to release the braking force. But when the knob is pulled into the On position, we create the two check valves that permit fluid to only go to, not from, the calipers. To be clear, pulling the knob does not create any braking force. No, that must come from pressure in the lines to the calipers. It doesn't matter whether you pull the parking brake knob gently or with great force; all you are accomplishing is the creation of the check valves.

Creation of the one-way device – check valve – *does not* create a stopping force. The force comes from the pressure at the caliper. The more pressure, the greater the stopping and holding force. What creates the pressure

Older position, on the subpanel.

New position, below the subpanel.

is the force applied to the top of the rudder pedals (and from there to the pistons in the master cylinders). If you want and expect the parking brake to work properly – to hold the airplane still even while doing a high-power runup – you need to really push HARD on the brake pedals! Saying, "Oh, the parking brake won't hold during the Overspeed Governor check; I need to use the brakes myself then," is almost always wrong and shows a lack of system understanding. If you can hold the airplane with brake pressure, then so can the parking brake, by trapping that same pressure. A leaking check valve is the only valid reason for the parking brake not being able to hold just as tightly as yourself … and leaking brake check valves are rather rare to find.

So, don't be afraid or reluctant to really *stand* on the top of those rudder pedals while setting the brake! Doing it two or three times; pumping the brakes is fine, too, and usually helps by forcing even more fluid to the caliper.

Does the *order* of parking brake control usage matter? Should I press the pedals and then pull the knob, or pull the knob and then press the pedals? It doesn't matter one whit! Realize that you are creating a one-way valve, not creating a two-way stop. If the brakes are already being applied by you, just pull the knob to trap the pressure. If the knob is already pulled, just pump the brakes until they get good and stiff as fluid is sent downstream of the check valve.

Not all King Airs have a Rudder Boost system, but many do. When checking the proper operation of this system during the runup, it is very important to have the parking brake set strongly enough that it alone will hold the airplane. If you are not using the parking brake, then you have to apply so much rudder pedal force that you tend to mask the motion and feel of the Rudder Boost system.

I think that most King Air simulators do a poor job of replicating the operation of the Rudder Boost system during its test in the real airplane. Almost always, the sims activate too soon, before sufficient difference in engine power is created by advancing only one power lever. Keep in mind that Rudder Boost is triggered by sensing *differential* power, not total power. The 350 uses torque to measure differential; the other models use raw P_3 bleed air pressure instead. (Torque is the better way to go!) Especially in those P_3-measuring airplanes with four-blade props – and, hence, higher low idle speeds – often it takes nearly full power on the "good" side before enough differential P_3 pressure is created to activate the Rudder boost "kick."

Just recently I observed a case in which the parking brake was not set strongly enough during the Rudder Boost test. This allowed the airplane to creep forward as the

left engine's power was increased. With more power on the left, the nose wheel deflected to the right as the plane slipped forward and turned away from the powered-up engine. Which rudder pedal went forward? The right one, of course. The pilot said, "There is the Rudder Boost activation," without realizing that it was *backwards*! "Good foot; good engine." The left, not right, pedal should have gone forward … as it did when we released the brake, taxied forward to center the nose wheel, then applied the parking brake HARD and repeated the test.

I wrote earlier that there were differences in the King Air braking system depending upon model and year. If you have learned and know your exact particulars, great. But if you are unsure, or are flying a variety of King Airs, then a dangerous "gotcha" can be discovered accidentally. You see, in many King Airs the copilot's rudder pedals cannot operate the parking brake! In these models, "Shuttle Valves" separate the pilot and copilot sides and the check valve exits only in the pilot's lines. If the copilot is flying the leg, taxis up to the parking area, and asks the captain to pull the parking brake knob for him since he cannot reach it, the brake is not set! Only if the copilot releases his pressure, the captain takes over and applies the pressure, can the parking brake be utilized. As stated, this is not true for all King Airs, but it is safer to assume it is the situation than to think the brake is set when actually it may not be.

Finally, how about releasing the parking brake after it has been set? Please – after the chocks are in place – take the time to sit in the pilot's seat, apply force on the top of the rudder pedals, then push the knob in to release the brake. If the knob is pushed in when pedal force is not present, three "bad" things can happen. First, because the trapped high pressure on the downstream side of the check valve is not balanced by high pressure on the upstream side, it is physically more difficult for the cable to push against that pressure to release the check valve. Second, balancing the pressures prevents a sudden surge of high pressure liquid – a shock wave – that will travel upstream to the master cylinders and increase their propensity to develop leaks. Third, it is safer. By holding the brakes, the airplane won't roll even if the chocks are not yet in place.

Trust the parking brake totally? Never! Use it often? Always! 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, contact Tom direct at *twcaz@msn.com*. Tom is actively mentoring the instructors at King Air Academy in Phoenix.

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

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Muscle Beech — the Mighty Turbo Barons

Despite being manufactured in small numbers, the Model 56TC and A56TC were the most powerful Barons built and helped pave the way for development and production of the distinctive Model 60 Duke.

by Edward H. Phillips

The decade of the 1950s and 1960s had been good to Beech Aircraft Corporation, and the company's executive vice president, Frank E. Hedrick, reflected on those years in an address to the North America Newcomen Society in September 1967. He recalled that total sales (commercial and military) for Beech Aircraft in 1950 were $16.6 million, and by 1966 sales had exploded to 10 times that amount to $164.6 million. In addition, he anticipated that sales for 1967 would hit $175 million, and they did.

Hedrick said it took the company 25 years – from 1932 to 1956 – to achieve cumulative sales worth $1 billion, but only another 10 years to reach the ethereal $2 billion level. He also remarked, "Let it be recorded here and now that we at Beech Aircraft are profoundly proud of the heritage of our pioneering past – from 1933 with sales of $17,552 and 10 employees, to sales of $175 million and 10,000 employees [in 1967] with accumulative sales of $2.2 billion."

One month later in Wichita, Kansas, more than 600 company officials and Beechcraft salesmen from around the world were attending the International Sales Spectacular and were told that two new airplanes would be entering the general aviation/business flying segment of the industry in only a few months. These were the Model 60 *Duke* (undergoing final development and flight testing) and the *Turbo Baron 56TC* that was entering production for the 1967 model year.

The Turbo Baron 56TC was based on the Model 95-D55 Baron airframe and a pre-production prototype, designated constructor (serial) number TG-1, made its first flight on May 25, 1966, with company engineering test pilot Bob Hagan at the controls. What gave the new Baron its muscle were two of Lycoming's most powerful piston powerplants – the turbocharged, fuel-injected, opposed six-cylinder TIO-541-E1B4, each rated at 380 horsepower at 2,900 RPM and 41.5 inches of Hg (mercury) manifold pressure.

Impetus for development of the Turbo Baron was two-fold. First, Cessna Aircraft Company and Piper Aircraft Company were developing the twin-engine Model 401 series and the PA-31 *Navajo,* respectively. The sleek Cessna was powered by 300-horsepower Continental TSIO-520E engines, while the Navajo featured either the Lycoming IO-540-M rated at 300 horsepower or the optional TIO-540-A1A that produced 310 horsepower. As it had in the past, Beech Aircraft needed to respond to the competition and offer Baron buyers an airplane possessing overall performance equal to or better than the Model 401 and Piper Navajo.

The second reason was, perhaps, of primary importance. In the mid-1960s Beechcraft engineers and marketers had begun working on design and development of the all-new Model 60 Duke – a cabin-class, piston-powered business airplane that was intended to set a new standard of style and performance unmatched by any other aircraft in its class. The Turbo Baron would act as a platform for development and FAA certification of the Duke's unique engine package, while offering Baron pilots the opportunity of owning one of the fastest lightweight twin-engine airplanes in the world.

The Turbo Baron's Lycoming powerplants were housed in large, streamlined cowlings featuring nacelles that swept across the top of the wing and extended all the way aft to the wing trailing edge. Development of the Lycoming O-540-series engines had begun in 1959, and by the mid-1960s had evolved into the 380-horsepower TIO-541 and 450-horsepower TIGO-541. The engines were equipped with three-blade, constant-speed, full-feathering propellers manufactured by Hartzell. To satisfy the thirst of the Lycoming engines, Beech engineers increased the D55's total fuel capacity to 182 gallons in bladder-type cells. In addition, maximum gross weight grew significantly to 5,990 pounds.

General dimensions of the 56TC remained the same as for the Model D55, with a wingspan of 37 feet 10 inches and the larger horizontal stabilizer/elevator of the Model 95-C55 that spanned 15 feet 11.25 inches.

The 56TC's cabin essentially was unchanged from that of the D55 Baron and featured six seats, but the

The Model 56TC featured two 380-horsepower Lycoming turbocharged engines that helped give the lightweight twin-engine Beechcraft a maximum speed approaching 300 mph. The engines, however, demanded diligent operation and meticulous maintenance, but proved to be highly reliable powerplants. (EDWARD H. PHILLIPS COLLECTION)

turbocharged Barons were among the first (if not the first) to have an (optional) Freon-based air conditioning system in a lightweight, twin-engine airplane. The installation was rated at 16,500 BTU and proved to be more than adequate to cool the cabin on hot days during taxi and climb to altitude.

The Model 56TC's chief claim to fame, however, was not keeping its occupants cool, but was all about performance. At an altitude of 20,000 feet, the new Baron was restricted to 262 mph but was easily capable of achieving 300 mph (TAS) at 24,000 feet (full throttle). By the standards of 1967, that made the 56TC one of the fastest piston-powered, lightweight multi-engine airplanes in the world. Service ceiling was an impressive 32,200 feet.

Further flight tests revealed a two-engine rate of climb exceeding 2,000 feet per minute, although rate of climb with one engine inoperative plummeted to only 412 feet per minute (at maximum gross weight). To take full advantage of the airplane's all-weather capabilities, Beech Aircraft offered the high-flying 56TC with a supplemental 66 cubic-foot oxygen system but also offered a 114 cubic-foot system as an option. The airplane was equipped with wing, empennage and propeller deicing and the majority left the factory so equipped. The FAA certified the Model 56TC on May 19, 1967. The powerful Baron was produced from 1967 through the 1969 model year and 82 were built. Yearly production numbers included 50 in 1967, 20 in 1968 and 12 in 1969.

Although sales of the 56TC were slow, the mighty Beechcraft did fill a gap between the Model E55 Baron and the much larger (but slower) Model A65 *Queen Air*. Beech engineers upgraded the airplane for the 1970-1971 model years as the Model A56TC. As with the 56TC, the A56TC could carry up to 300 pounds of baggage in the spacious nose compartment or a buyer could opt to install remote-mount avionics components, which often reduced baggage capacity (varied with the amount of avionics installed).

The only technical change was in response to customer feedback calling for more fuel, and Beech Aircraft responded by increasing capacity to 207 gallons of useable fuel. In addition, the 56TC's wing-mounted pitot tube was relocated to the nose of the A56TC. The Lycoming engines were unchanged, and as with the 56TC, the turbocharger system was fully automatic and required little pilot workload to manage. Maximum gross weight remained at 5,990 pounds. Service ceiling with one engine inoperative was 18,600 feet at gross weight, increasing to 23,000 feet at a weight of 5,000 pounds. The factory rolled out only nine A56TCs during the 1970 model year followed by a mere two airplanes in 1971 when production was terminated in favor of the popular Model 60 Duke and the advent of the new Model 58 Baron.

The sleek Duke was introduced by Beech Aircraft Corporation for the 1968 model year. Combining speed, cabin comfort and an airframe that looked like no other business aircraft on the planet, design work on the Duke began early in 1965. Specifically, the airplane was intended to fill a gap in Beech Aircraft's product line between the 56TC and the Model 65 Queen Air (production of the Model 50 *Twin Bonanza* was terminated after the 1961 model year).

The Model 60 Duke was aimed at the owner-flown segment of the business aircraft market. Introduced for the 1968 model year, the Duke represented the best Beech Aircraft Corporation could offer in an airplane having a distinctive design, possessing ultra-high performance and cabin comfort rivaling that of the highly successful Model 90 King Air. For its time, the Duke was the ultimate lightweight twin-engine, piston-powered business airplane available. (WICHITA STATE UNIVERSITY LIBRARIES, SPECIAL COLLECTIONS AND UNIVERSITY ARCHIVES)

The Duke also would answer a fresh challenge from competitor Cessna Aircraft Company with its Model 421 that featured a pressurized cabin that seated up to six occupants. A prototype first flew in October 1965. The pressurization system (4.2 psi maximum differential) allowed a cabin altitude of 8,000 feet at an airplane altitude of 20,000 feet. The Model 421 proved to be a great success for Cessna Aircraft, with 200 built in 1968, the first year of production. Powered by two Continental (T)urbosupercharged, (G)eared, (S)upercharged, (I)njected, (O)pposed six-cylinder piston engines (TGSIO-520-D) each rated at 375 horsepower, the new Cessna had a maximum speed of 286 mph at an altitude of 16,000 feet and a service ceiling of 26,000 feet. In terms of overall performance and cabin comfort, the Model 421 would prove to be a worthy competitor to Beech Aircraft's powerful Duke.

By early 1966 construction of a pre-production prototype of the Model 60 (designated constructor number P-1) was well underway, and the airplane flew for the first time on December 29, 1966, with engineering test pilot Bob Hagan at the controls. As mentioned previously, the Duke would borrow heavily from the 56TC/A56TC's fuel system, cowling and engine installations, all of which had be developed and proven on the Turbo Barons. The Duke's engines were the same Lycoming turbocharged TIO-541-E1A4 units installed on those aircraft and turned Hartzell three-blade, constant-speed, full-feathering propellers that featured a diameter of 6.2 feet. Performance calculations indicated that the Model 60 would have a maximum cruising speed of 278 mph at an altitude of 25,000 feet, and a service ceiling of 30,800 feet (very similar to the Turbo Barons).

Although the Duke shared many of the basic airframe systems with the Model 56TC/A56TC, there were some differences. Whereas the 56TC used an NACA 23017-5 airfoil at the wing root, the Duke's wings employed a NACA 23016-5 airfoil at the root, changing to the same 23010-5 airfoil used on the Model D55 Baron at the wing tip. The all-metal, cantilever wings spanned 39 feet 4 inches and featured a total area of 213 square feet. Wing chord was 9 feet 2 inches, dihedral 6 degrees, with incidence set at 4 degrees at the root and 1 degree at the tip. Wing loading was 31.6 pounds per square foot while power loading was 8.8 pounds per horsepower. Flaps were operated electrically, as was the tricycle landing gear.

One major advantage of the Duke over the 56TC/A56TC was its pressurized cabin that was only beginning to appear in an aircraft of the Duke's class. Bleed air from the turbosuperchargers was routed into the cabin where valves automatically regulated cabin altitude in response to the pilot's input to a controller in the cockpit. The system was capable of maintaining a maximum differential (difference between atmospheric pressure outside of the airplane compared to air pressure inside the cabin) of 4.6 pounds per square inch (psid). The differential provided sea level conditions in the cabin up to an airplane altitude of 10,000 feet, and a cabin altitude of 10,000 feet at an airplane altitude of 24,800 feet.

As for the cabin, a center aisle flanked on each side by two seats were standard, but six seats were optional (although when fitted with six seats the cabin was snug). Many customers opted for six seats based on mission requirements. Entry into and exit from the cabin was through a hinged door located on the left,

aft side of the fuselage. A 32-cubic-foot baggage compartment was provided in the nose section and a second compartment offering 28 cubic feet of storage was located in the aft cabin.

To keep the cockpit and cabin at a comfortable temperature at high altitudes and on the ground in winter, a fuel-fed combustion heater rated at 45,000 BTU was standard along with an optional, electrically-driven vapor cycle air conditioning system rated at 14,000 BTU. A list of optional equipment included (but was not limited to) fifth and sixth seats, aft-facing third and fourth seats, writing desks; cabinetry to house refreshments, a toilet, urethane paint and electric deicing for the windshield.

To feed avgas to the Lycoming powerplants, the standard fuel system featured two interconnected cells in each wing that held a total of 142 gallons, and an optional system with four interconnected cells in each wing was available that increased capacity to 204 gallons. Many Duke operators opted for the extra fuel that increased range to 973 statute miles at an altitude of 25,000 feet while cruising at 271 mph (at a 75 percent power setting). Maximum cruising speed was 278 mph at 25,000 feet, service ceiling 30,800 feet, and maximum gross weight 6,775 pounds.

Following FAA certification in February 1968, the Duke was built at Beech Aircraft's Wichita facility, but in June 1968 final assembly was relocated to the company's facilities in Salina, Kansas. During the 1968 model year, only 15 airplanes were built as production began to ramp up to full capability. The next year 91 aircraft were built, followed by 16 in 1970. During the latter half of the 1970 model year, engineering implemented a series of improvements that resulted in the Model A60 replacing the original Duke on the production line.

Externally, the two airplanes were indistinguishable from each

The Model A60 and Model B60 Duke were upgraded versions of the original Model 60 and sold well throughout the 1970s and into the early 1980s. Beech Aircraft's Salina, Kansas, division assembled and delivered nearly 600 examples of the Duke during a period of 14 years before production was terminated.
(EDWARD H. PHILLIPS COLLECTION)

other, but under the cowlings new, lightweight, improved turbosuperchargers were installed that provided extended component life and allowed the TSIO-541-E1C4 to develop maximum rated horsepower at a higher altitude. Although maximum speed was unchanged at 286 mph, service ceiling increased to 35,800 compared with 30,800 feet for the original Duke. In addition, fuel economy was improved and the cooler operating temperature of the turbosuperchargers were beneficial and served to increase engine longevity.

The cabin of the Model A60 also received a facelift, with new selections of interior fabric and leather, and the pressurization control system was revised to provide smoother control of the cabin altitude. The A60 remained in production until the 1974 model year, when it was replaced by the Model B60. The A60 had sold well, however, with 23 built in 1970, 27 in 1971, 28 in 1972 and 43 in 1973.

In October of that year, the Duke experienced its best month of sales since 1968 when orders for 18 airplanes were received worth more than $3.3 million.

The Model B60 was the final version of Beech Aircraft's handsome Duke. It featured a cabin that was slightly wider and longer that allowed the use of redesigned seats and improved overall passenger comfort. The engines used improved intake valves, and a new turbosupercharger overboost relief valve was installed. In addition, Beech engineers designed an electronic overheat detection system to monitor the nickel-cadmium battery's cell temperatures, and added a new duct to provide cooling air to the battery compartment.

For the 1975 model year, the entire pressurization system was upgraded to a lightweight AiResearch design with new Lexan outflow and safety valves and smaller controller in the cockpit that saved space on the instrument panel. By 1976, customers could order wet-cell wingtip fuel tanks each holding 30 gallons and increased the Duke's range to 1,287 statute miles at a power setting of 65 percent. Time between overhaul of the Lycoming engines increased to 1,600 hours in 1977 and maximum cruise speed was raised to an impressive 283 mph.

Twelve years after the Duke was introduced, in March 1979, Beechcrafters at the Salina facility rolled out the 500th Duke – a Model B60 "Special Edition" bearing a silver and black exterior paint design with a custom cabin interior to match. The high-performance, owner-flown Duke soldiered on until 1982 when lackluster sales forced the company to terminate production after more than 500 airplanes had been built. The last Duke delivered in 1982 was constructor number P-596. Only 16 airplanes were built that year.

When introduced for the 1968 model year, the Duke sold for more than $600,000, but that figure could increase significantly depending on optional equipment and avionics. As of early 2017, used aircraft prices for the Model A60 and B60 Duke ranged from $99,000 up to $180,000 depending on total time airframe/engines and avionic equipment. Major drawbacks to the Duke's resale value are the high operating, maintenance and replacement costs of the Lycoming engines, as well as airframe corrosion issues with the empennage structure. KA

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.

Garmin Pilot Grows Feature Set for iOS and Android Mobile Devices

Garmin is pleased to announce the addition of new features for the Garmin Pilot application for Android and iOS mobile devices. Garmin Pilot 6.2 for Android incorporates approach chart overlays on the moving map, enhancements to stadium TFRs, glide range ring, logbook tracks and more, while the 9.1 version of Garmin Pilot for iOS adds a new high-resolution basemap, worldwide gridded winds and a streamlined Connext devices page. Within the iOS version, pilots can also access aircraft performance profiles, checklists and weight and balance data for additional aircraft types.

Android 6.2

Chart overlays

Pilots that utilize Garmin FliteCharts now have the option to overlay instrument approach procedures (IAPs) on the moving map. The chart overlays may be displayed in North Up or Track Up while flying, offering a seamless transition from the enroute to approach phase of flight.

Glide Range Ring

Garmin Pilot offers pilots the option to display a glide range ring on the moving map within Android mobile devices. The glide range ring is depicted as a cyan ring around the estimated area that can be reached by the aircraft in a best glide configuration. Range is based on Best Glide (VG) speed and the glide ratio entered by the pilot within the aircraft profile, which then utilizes the aircraft's altitude and wind to determine range ring distance. The option to shape the glide range ring for rising terrain that may interfere with the aircraft's glide range is also available.

Additional features for Android mobile devices:

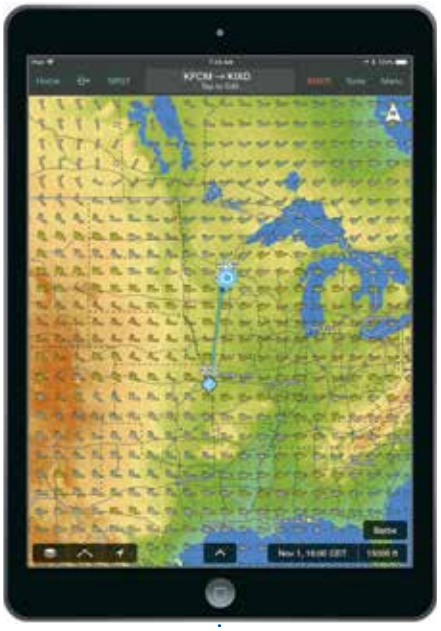
- Temporary Flight Restrictions (TFRs) specific to stadiums incorporate unique coloring to denote when the TFR is active or inactive. Blue TFRs depict the event

is between 1-7 days in the future, yellow TFRs indicate the event is within 24 hours and red TFRs depict the TFR is active.

- GPS-based tracks can now be embedded within a logbook entry, which displays a geo-referenced map of the associated flight, so pilots can easily recall recent flight history and tie it to their electronic logbook within Garmin Pilot.
- Automatic downloads file updates and next cycles of existing data and charts to a mobile device as they become available, so pilots always have the most up-to-date information.
- Flight plans can be manually sorted and stored either alphabetically or in a customized fashion as determined by the pilot.

iOS 9.1
OpenStreetMap

Utilizing OpenStreetMap, pilots now have access to high resolution, detailed street maps for improved situational awareness. OpenStreetMaps display street names, parks, railways and other pertinent landmarks such as golf courses and schools. These high-resolution maps are available as part of a standard Garmin Pilot subscription and once downloaded to a tablet, are accessible while on the ground and in-flight.



Additional features for iOS mobile devices:

- Garmin Pilot now incorporates gridded winds aloft forecast data based on the Global Forecast System (GFS) weather model.
- The Garmin Pilot aircraft library has been expanded to include new performance profiles, checklists and weight & balance data for Beechcraft, Cessna, Cirrus, Van's aircraft and more.
- A new Connext Devices Page displays the associated Connext-enabled device along with symbology that depicts the specific features it supports.

The latest versions of Garmin Pilot for Android and iOS are available immediately. For additional information, visit: *www.garmin.com/aviation*.

Sierra Nevada Corporation Introduces New King Air 350ER Enhancement Kit

Sierra Nevada Corporation (SNC) recently demonstrated a suite of technologies, together called the King Air 350 Extended Range (ER) Mission Enhancement Kit. SNC teamed with Vector-Hawk Aerospace (VHA), a subsidiary government and military sales division of Blackhawk Modifications in Waco, Texas, and Advent Aircraft Systems, Inc. of Tulsa, Oklahoma to offer the Mission Enhancement Kit.

The company says the kit will offer the capability for greatly increased performance in high-density altitude areas of operation, with increased safety, performance and mission capability.

The Mission Enhancement Kit is specifically designed for the King Air 350ER at 16,500 and 17,500 pounds maximum allowable takeoff weight (MTOW), and is specifically developed for military and government operations. It includes two factory-new Pratt & Whitney Canada (P&WC) PT6A-67A engines, a new MT 5-bladed composite propeller assemblies and spinners, a True Blue Power lithium-ion battery and Advent's Electronic Anti-Skid Braking (eABS) system. Training, support and a five-year/2,500 hour enhanced new-engine warranty are also included.

The new product will provide a 25-30 percent increase in power, which translates into improved climb and cruise performance for King Air 350ERs, especially during operations in high-density altitudes (high, hot). Although the PT6A-67A will produce a 400-thermodynamic shaft horsepower (SHP) increase

over the stock PT6A-60A, the Mission Enhancement Kit will actually reduce the overall weight of the aircraft by about 18 pounds.

Testing is underway at Blackhawk headquarters in Waco, Texas, and the Federal Aviation Administration Supplemental Type Certification (STC) is expected to be completed early in the second quarter of 2018. Once approved, SNC will exclusively provide the Mission Enhancement Kit, including the Blackhawk Engine+ Upgrade STC Kit, Advent eABS and True Blue battery, to the Special Missions market for the United States and most foreign governments/military aircraft weighing 16,500 lbs. and above. SNC will complete the installations at their network of authorized install facilities.

For more information on SNC visit *www.sncorp.com*. KA

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