King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

APRIL 2017 • VOLUME 11, NUMBER 4 • $6.50

Fighting Fires

King Airs Play Leading Role in Containing Wildfires

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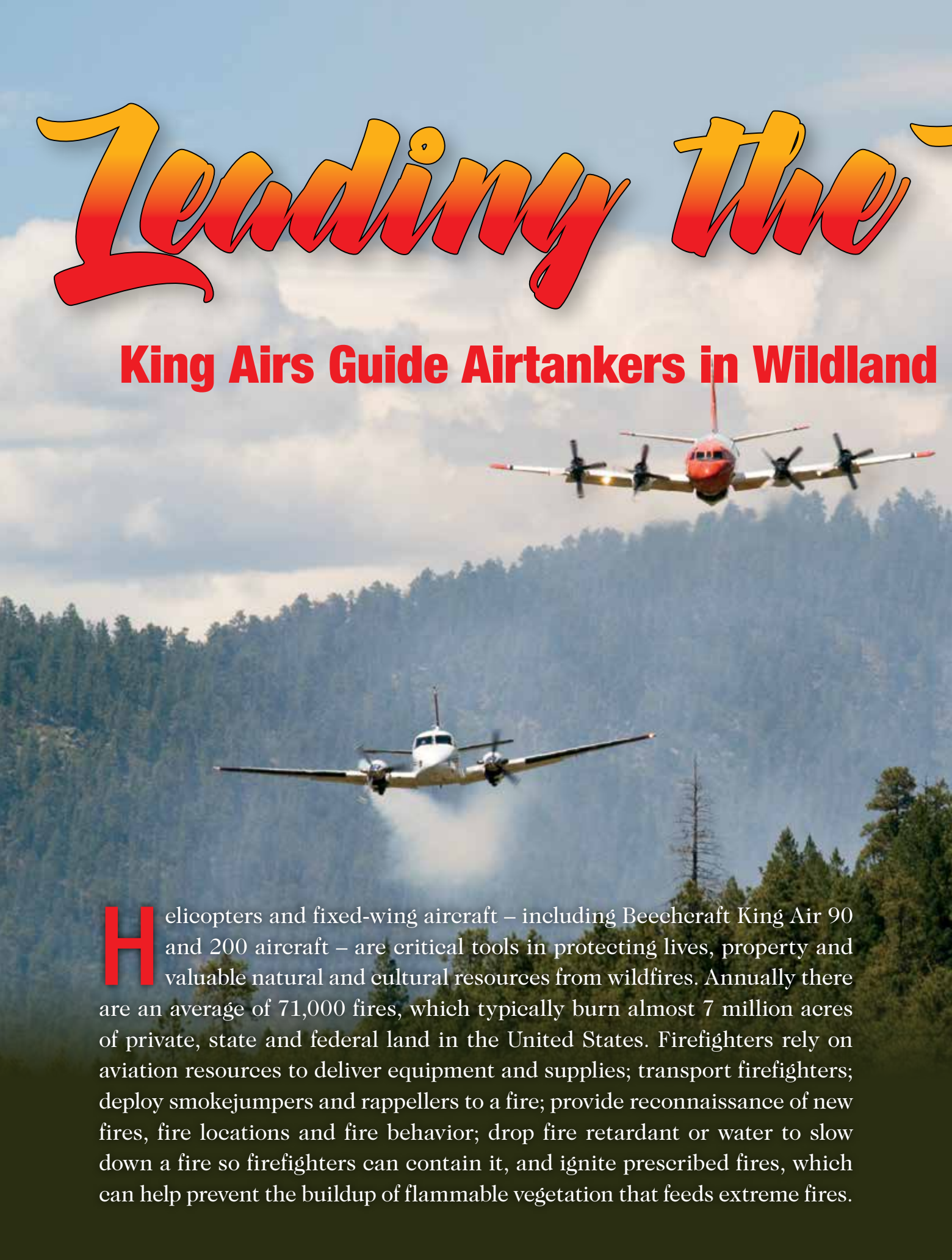
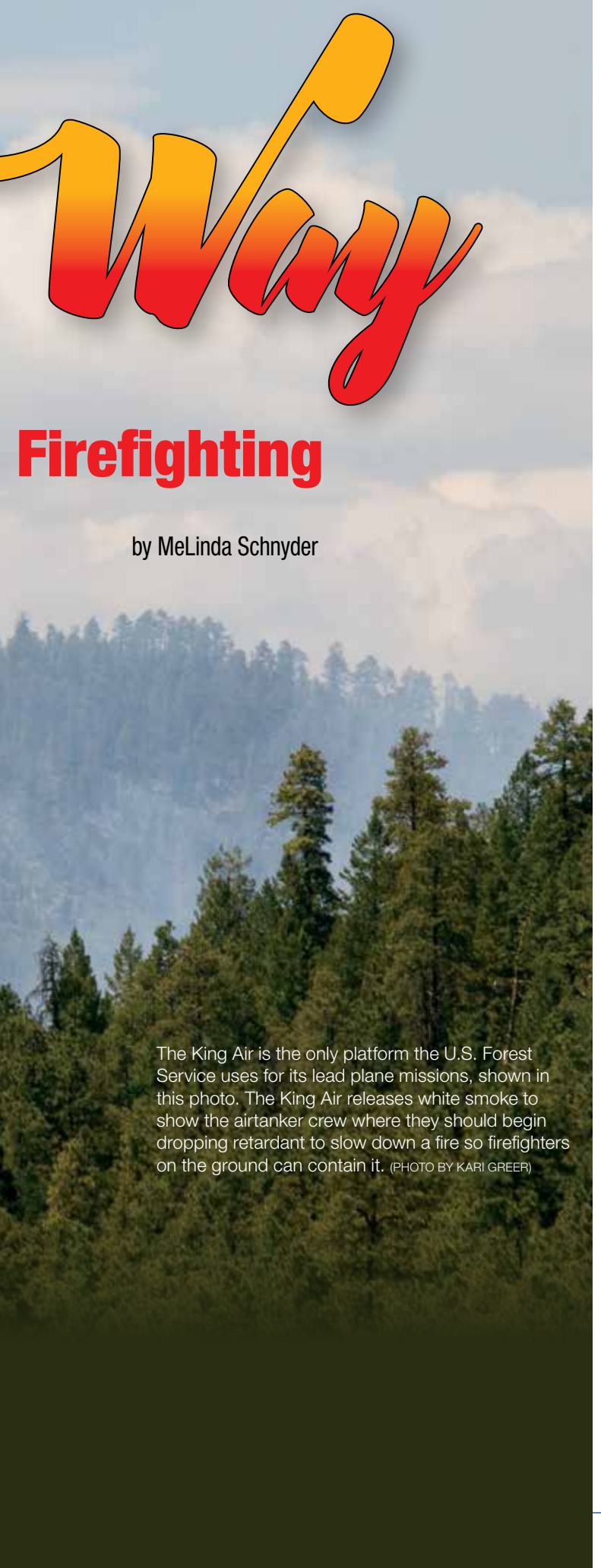


Helicopters and fixed-wing aircraft – including Beechcraft King Air 90 and 200 aircraft – are critical tools in protecting lives, property and valuable natural and cultural resources from wildfires. Annually there are an average of 71,000 fires, which typically burn almost 7 million acres of private, state and federal land in the United States. Firefighters rely on aviation resources to deliver equipment and supplies; transport firefighters; deploy smokejumpers and rappellers to a fire; provide reconnaissance of new fires, fire locations and fire behavior; drop fire retardant or water to slow down a fire so firefighters can contain it, and ignite prescribed fires, which can help prevent the buildup of flammable vegetation that feeds extreme fires.

Way Firefighting

by MeLinda Schnyder



The King Air is the only platform the U.S. Forest Service uses for its lead plane missions, shown in this photo. The King Air releases white smoke to show the airtanker crew where they should begin dropping retardant to slow down a fire so firefighters on the ground can contain it. (PHOTO BY KARI GREER)

Fire season, typically early April to mid-October, is getting longer each year and some of the fires are more intense. In 2015, more than 10 million acres burned – the most recorded in a single fire season since the agencies started tracking data. The U.S. Forest Service cites climate change, the growth of communities into wildlands and the buildup of flammable vegetation for making managing fire riskier and more complex.

No one agency has enough resources to manage wildfires on their own, especially during peak season in July and August. The U.S. Forest Service, Bureau of Land Management (BLM) and National Weather Service saw the need to work together to reduce duplication of services, cut costs and coordinate national fire planning and operations. They formed the Boise Interagency Fire Center in 1965. The National Park Service and Bureau of Indian Affairs joined them in the mid-1970s, then the U.S. Fish and Wildlife Service in 1979. The center's name changed in 1993 to the National Interagency Fire Center to more accurately reflect its national mission.

Today the National Interagency Fire Center (NIFC), still based in Boise, Idaho, is the command hub for the nation's response to wildfires. More than 600 employees from eight federal and state agencies work together to mobilize aircraft, firefighters, engines, equipment and intelligence to respond to wildfire. While the majority of wildland fires occur in the western U.S., NIFC serves the entire country and in the past year has responded to major fires in Tennessee, Kansas and Oklahoma.

"Different parts of the west have the peak of their fire seasons at different times of the year," said Don Bell, Flight Operations manager for BLM. "We just fly to wherever the fires are. We generally start out in the southwest and Texas in the April-May timeframe and then as the monsoons hit in early July, we'll move up into the Great Basin: Colorado, Nevada and southern Idaho. A little later in the summer we usually move up into the Pacific Northwest and Montana. As it starts to wane in the northwest in the September-October timeframe, we end up heading down to southern California."

Fixed-wing aircraft used in wildland firefighting fill the roles of lead planes, smokejumper aircraft, air tactical platforms and airtankers (see sidebar for descriptions of these roles). We talked to two National Interagency Fire Center agencies that operate King Air fleets about the platform's use in aerial firefighting.

Bureau of Land Management

The Bureau of Land Management's Office of Fire and Aviation is responsible for aircraft operation support for wildfire and resource management missions within the bureau. BLM's aviation program is the largest within the Department of Interior's eight bureaus. They own a 1990 King Air B200 as a firefighting aircraft and are in the process of purchasing a second

Firefighters rely on aviation resources for a number of critical functions when protecting lives, property and valuable natural and cultural resources from the 71,000 annual wildfires each year. Two roles the King Airs fill are air tactical group supervisor, which functions as the air traffic controller for fires, and lead plane, which guides airtankers on where to drop fire retardant so that it lands ahead of the moving fire or along its edge. Rather than a fire extinguisher, the retardant slows progress to give firefighters on the ground time to reach the area. (PHOTO BY KARI GREER)

King Air B200. For the peak season, they get additional support by contracting two King Airs, which they operate with agency pilots.

As Flight Operations Manager, Bell oversees BLM's four pilots, is fleet manager and is a pilot in command on lead plane missions. He started his career as a firefighter and became a smokejumper, then he became a pilot and eventually put the two skills together to work for the U.S. Forest Service for 20 years and joined BLM in 2011.

BLM started flying the 1990 King Air B200 in 2015 after acquiring it through an interagency transfer from the Bureau of Reclamation. The airplane had been sitting for awhile and needed maintenance and paint. BLM also upgraded avionics to Garmin 650/750 and installed a smoke system, which is similar to systems used by airshow performers. The aircraft has 14,000 total hours, including about 670 hours BLM flew over the first two seasons of operating it.

BLM uses their King Airs for two missions: lead plane and air tactical, also known as air attack.

"The air tactical or air attack is up above all the other aircraft that are flying around the fire; it's like an air traffic controller for fires, guiding aircraft as well

TOOLS IN THE AIR MANAGING FIRE ON THE GROUND

Here are the roles airplanes play in wildland firefighting:

Lead Planes guide airtankers to their drop zone. They communicate with firefighters on the ground and with airtankers, releasing white smoke to show where the retardant should go.
Example aircraft types: Beechcraft King Air 90 and 200

Air Tactical Group Supervisor or Air Attack planes provide coordination of aerial resources over a wildland fire. They provide vital eyes in the sky for firefighters on the ground, and ensure safe aviation operations.
Example aircraft types: Beechcraft King Air 90 and 200, Twin Commander 500 and 690

Smokejumper aircraft deliver smokejumpers and cargo by parachute to remote locations for initial attack and extended support of wildland fires. Typically, one aircraft will carry eight to 12 smokejumpers and their initial supply of gear.
Example aircraft types: DeHavilland DH-6 300 series Twin Otter, Shorts Sherpa C-23A, Dornier 228, CASA 212

Single Engine Airtankers (SEATs) can deliver up to 800 gallons of retardant to support firefighters on the ground. These small airplanes can reload and operate in areas where larger airtankers cannot.
Example aircraft type: Air Tractor AT-802

Large Airtankers can deliver from 2,000 to 4,000 gallons of fire retardant to support firefighters on the ground.
Example aircraft types: Lockheed P2V, Lockheed HC-130H, British Aerospace BAe-146, McDonnell Douglas MD-87, Lockheed C-130Q, Avro RJ85

Water Scoopers are amphibious aircraft that skim the surface of a body of water and scoop water into an onboard tank and then release it on a fire.
Example aircraft types: Bombardier CL-415 and Air Tractor Fire Boss

Very Large Airtankers (VLATs) are capable of delivering more than 8,000 gallons of fire retardant to support firefighters on the ground.
Aircraft type: McDonnell Douglas DC-10

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The National Interagency Fire Center is the command hub for the nation's response to wildfires. More than 600 employees from eight federal and state agencies – including the U.S. Forest Service and the Bureau of Land Management – work together to mobilize aircraft, firefighters, engines, equipment and intelligence to respond to wildfire. This photo shows National Interagency Fire Center resources gathered in Mesa, Arizona, for an annual off-season pilot and mission training.

as resources on the ground, like helping fire engines find access to the fire," Bell said.

He added: "The position that I'm a part of as a pilot is the lead plane role. I'm generally 1,000 feet AGL around the fire or lower. My job is about efficiency and safety. I make sure we don't have a lot of down air or too much turbulence, check visibility, go down and look for towers and wires, and then figure out exit routes for the tanker because we are generally operating in mountainous terrain. When the airtanker comes on scene, I'll go out and join up with the tanker, I'll describe the drop and then they follow me around and I get them on line. When I'm over the start point, I'll verbally describe it and use the smoke system to mark it. Then, I turn and climb out of the way."

The job continues with an evaluation of the drop and repeating the process for each tanker that arrives with a load of retardant. Fire retardants are typically dropped ahead of the moving fire or along its edge, and rather than a fire extinguisher, the retardant slows progress to give firefighters on the ground time to reach the area.

BLM has started to combine the two missions on one aircraft with what they call an aerial supervision module. The tactical supervisor joins the lead plane pilot. Having a second B200 will allow that collaboration to happen more often, and it also gives the agency year-round access to the aircraft.

"In the off-season, we'll do training and quite a bit of maintenance," Bell

said. "We do two of the four phases of inspection so that we can try to get ahead of the maintenance and not have a bunch of downtime right in the middle of fire season."

Prior to the first B200 purchase, BLM had contracted King Air U-21, E-21 and C90 models.

"We've used the King Air 90s and 200s for probably more than 20 years, and it's a proven platform for us," Bell said. "The King Air is a very capable and pilot-friendly aircraft, which is important when you're flying at a lower level in mountainous terrain. The B200 is just fantastic. It's faster and the endurance is just huge, it's like six hours of fuel. We don't tend to use that, we try to limit our missions to three to four hours."

U.S. Forest Service

The U.S. Forest Service (USFS) manages and protects 154 national forests and 20 grasslands in 43 states

The Bureau of Land Management and the U.S. Forest Service have started to combine the lead plane and air tactical group supervisor missions into one aircraft, called an aerial supervision module. The agencies conducted aerial supervision module training flights, shown here, this spring in Mesa, Arizona.

SMOKEJUMPERS ARE A NATIONAL RESOURCE

A U.S. Forest Service forester first proposed smokejumping in 1934 as a means to quickly provide initial attack on forest fires. By parachuting in, self-sufficient firefighters could arrive fresh and ready for the strenuous work of fighting fires in rugged terrain. The smokejumper program began in 1939 as an experiment in the Pacific Northwest and the first fire jump was made in 1940 on Idaho's Nez Perce National Forest. In 1981, the first woman smokejumper in the nation successfully completed the training program at the McCall Smokejumper Base in Idaho.

Today, Smokejumpers are a national resource. Jumpers travel all over the country to provide highly-trained, experienced firefighters and leadership for quick initial attack on wildland fires in remote areas. Fire fighting tools, food and water are dropped by parachute to the firefighters after they land near the fire, making them self-sufficient for the first 48 hours. Smokejumpers work from about June 1 through October. Over 270 smokejumpers are working from seven Forest Service smokejumper bases located in California, Idaho, Montana, Oregon and Washington. There are also two Bureau of Land Management smokejumper bases: one in Boise, Idaho, and the other in Fairbanks, Alaska.

Aircraft commonly used in smokejumper operations include DeHavilland DH-6 300 series Twin Otter, Shorts Sherpa C-23A, Dornier 228 and CASA 212. For safety, there is always a spotter on board communicating essential information about the wind, fire activity and terrain to the pilot and the jumpers.

and Puerto Rico. Their Fire and Aviation Management division owns and contracts aircraft primarily for wildfires, but also responds to incidents including floods, hurricanes and other disasters.

The King Air is the only platform the USFS uses for its lead plane missions, and it contracts 15 aircraft for those purposes through Greenwood Group, headquartered in Ponca City, Oklahoma. Each year agency pilots fly these 15 contracted aircraft 3,500 hours. The Forest Service uses several platforms for air attack missions, including a King Air 200 they own and base in Atlanta. They own a second model 200 based in Ogden, Utah, that conducts infrared missions to map incidents.

The U.S. Forest Service said it uses King Airs for wildland firefighting because Textron Aviation and Beechcraft support the King Air in the lead plane mission, which requires flying low in mountainous terrain and therefore presents different stressors on the aircraft.

Until this year, the Forest Service had been using King Air 90s for its lead planes.

"We are beginning to transition to the King Air 200 platform for our lead planes," said Jason Baldwin, the USFS's national aerial supervision program manager. "This is a phased in approach, and by July we should have eight B200s operational along with seven 90s."

Greenwood Group is purchasing existing available B200 aircraft and modifying them to meet the USFS contract specifications. The larger aircraft will give USFS the speed, payload and performance they need for their missions, which typically last four to four-and-a-half hours for either firefighting role. Like the BLM, the Forest Service is starting to combine the missions on one aircraft, with an air tactical supervisor and an agency pilot on board.

"There isn't a purpose-built lead plane available on the market," Baldwin said. "We've used King Airs now for more than 10 years, and ultimately it's because Textron Aviation and Beechcraft support the King Air in the lead plane mission. Flying low in this role, there's different stressors that have to be supported by the manufacturer."

The aircraft are based in eight cities but move frequently because they are national shared resources.

"We could end up with five or six lead planes based in southern California like we did last year," Baldwin said. "We move them based on national incident need and priority, and when we're busy they can move daily." KA

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MAINTENANCE TIP

The King Air Cabin Door – Part Two

by Dean Benedict

I just wrote about the cabin door in the February 2017 issue of this magazine, but I thought of a few more points I could make on this topic.

To summarize briefly where I left off: If a King Air has a cabin door squawk, nine times out of 10 it is going to be the door warning light on the annunciator panel coming on when the door is properly secured. The warning light is triggered by switches. All King Airs have two switches in the door frame and one switch in the door handle inspection light hole. Newer King Airs, plus many 300s and 350s, have two additional switches, one at each upper door hook. If one of these switches fails, you get that warning light. A bad switch is the most common reason for a door light when the door is closed and locked.

Obviously, if you get a light on the ground, you aren't going to take off until you verify the door is properly closed and the light is extinguished. It could be that the door wasn't properly latched, or it could be a bad switch. If everything looks good on the ground, but you get a cabin door light on the annunciator panel after you are airborne, the chances are your door is fine and you have a switch going bad somewhere in the system. This assumption is based on my experience with King Airs over the last 40-plus years.

Warning Light in Flight – What to Do

The POH addresses the subject as follows:

Illumination of Cabin Door Warning

Warning: Do not attempt to check the security of the cabin door. Remain as far from the door as possible with seat belts securely fastened until the airplane has landed.

1. *If the cabin door warning annunciator illuminates, depressurize cabin (consider altitude first) by activating cabin pressurization dump switch on pedestal.*
2. *Do not attempt to check cabin door for security until cabin is depressurized and the airplane is on the ground.*
3. *Check security of cabin door (on the ground) by lifting the cabin door step and checking position of arm and plunger. If unlocked position of arm is indicated, turn door handle toward locked position until arm and plunger are in position.*

An extended King Air cabin door. When the door is open, the handle is below the bottom step; when the door is closed, the steps fold down out of the way and the handle is at the top of the door inside the airplane.

Furthermore, the placard next to the handle is pretty clear: "Do not attempt to check security of cabin door by moving door handle unless cabin is depressurized and aircraft is on the ground."

What Not to Do

Should you get a cabin door warning light in flight, don't touch that door handle! Many years ago, a pilot got a cabin door warning light during flight and his co-pilot left his seat to check the door. Apparently, he grabbed the handle to see if it was locked, but turned it the wrong way! Since the aircraft was pressurized, the door flew open and the co-pilot was sucked out of the aircraft. The pilot declared an emergency, made his descent and landed. Of course he assumed his co-pilot fell from altitude and was fatally injured. Imagine his surprise when he discovered the co-pilot had managed to grab hold of the door cable, held on for dear life, and lived! Astonishingly, he was not seriously injured (at least not physically). Reportedly, the biggest problem

A King Air cabin door with a crack in one of the Royalite panels located next to the steps, and a close-up view of the crack. This is a cosmetic flaw and has nothing to do with the airworthiness of the aircraft.

the emergency personnel had was helping the poor guy pry his fingers from around that door cable. They say 30 minutes went by before the guy could manage to let go. This is a true story! I was at BeechWest in Van Nuys when it happened and reports of the incident reverberated throughout the Beechcraft community. I'm guessing it was during the late '70s or early '80s. My recollection is that the pilot landed at San Luis Obispo, California. I have scoured the internet for mention of this incident and have come up dry, but I'm not making it up!

It just so happens that when a King Air cabin door comes open in flight, it stays at 90 degrees to the fuselage. It won't flop all the way open as you might expect. This may have helped the co-pilot to hold on.

Is the Door Essential?

It comes as a surprise to most King Air owners, but your cabin door is not essential for flight. What I mean by this is that a King Air can take off, stay aloft and land safely with the door removed. Am I suggesting you do this? Of course not. But this speaks

to the stability of the King Air in flight. Think of the number of King Airs that have been converted to jump planes.

I mention this because I'm still fuming over a pre-buy inspection done on a 300 that was brought to my attention by the seller of the aircraft. The shop chosen by the buyer had squawked a long list of things as airworthy items that weren't the least bit. On the top of this list was "cracked Royalite panels on the cabin door interior surface." Really? This makes my blood boil. Royalite is a lightweight fire-rated plastic used extensively in aircraft interiors. Some King Air doors have carpet in this area (on either side of the steps), and many have Royalite panels. This is part of the aircraft decor! It is totally cosmetic, and has nothing whatsoever to do with the airworthiness of the aircraft. Calling a crack in the Royalite (such as what's shown in the photo on page 11) an airworthy item is only done by a shop hell-bent on gouging the seller and/or buyer in every way possible.

The tendency to turn a pre-buy inspection into a full-on restoration project has gotten out of hand. A pre-buy is supposed to give the buyer a clear picture of the condition of the aircraft so that he/she and the seller can come to an agreement on price and terms. It's not supposed to take a 30-year-old aircraft and make it brand spanking new!

Airworthy items (actual safety-of-flight items) are typically addressed by the seller before the buyer takes possession, or the buyer pays a reduced price to the seller and has them addressed post-purchase. Either way, the shop doing the pre-buy inspection can't sign off an aircraft with a known airworthiness issue. Sadly, unscrupulous shops hold buyers and sellers over a barrel by labeling every squawk, quirk and minuscule flaw as airworthy. Fortunately, a knowledgeable King Air mechanic can advise buyers and sellers on which squawks are truly airworthy and which are not.

With respect to King Airs, in particular, their resilience is one of their most desirable qualities. With proper maintenance, they'll go on and on. May your King Air be no exception to this rule; and may no one touch the door handle in flight. Happy flying! KA

Dean Benedict is a certified A&P, AI with over 40 years of maintaining King Airs. He's the founder and former owner of Honest Air Inc., a maintenance shop that specialized in Beech aircraft with an emphasis on King Airs. In his new venture, BeechMedic LLC, Dean consults with King Air owners and operators on maintenance management, troubleshooting, pre-buy inspections, etc. He can be reached at *drdean@BeechMedic.com* or (702) 773-1800.

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NBAA Yearly Top Safety Focus Areas and the Ongoing Threat of ATC Privatization

by Kim Blonigen

2017 NBAA Top Safety Focus Areas

The National Business Aviation Association (NBAA) recently released its annual list of Top Safety Focus Areas, topics identified by the NBAA Safety Committee as primary risk-mitigation targets for all business aircraft operators.

Each year during its annual risk assessment meeting, the NBAA Safety Committee reviews safety survey results, risk-based safety data, and qualitative input from industry and regulatory partners, other NBAA committees and association members. Following this data-driven review, the committee members deliberate and develop a list of safety focus areas for the year. The committee goal is to promote and stimulate safety-focused discussion and advocacy throughout the business aviation industry, as well as to help NBAA prioritize how it should focus its safety-improvement resources.

Below are the 2017 NBAA Top Safety Focus Areas and a summary of each.

- **Loss of control inflight (LOC-I) –** LOC-I accidents result in more fatalities in business aviation than any other category of accident. The NTSB continues to target this issue in their "Most Wanted" list of safety improvements, as the "alarming consistency of catastrophic outcomes in this type of accident make this a targeting issue for safety improvement by the NBAA Safety Committee and aviation professional organizations across the globe."
- **Runway excursions –** Documented as the most common type of accident in business aviation, runway excursions account for nearly a third of all accidents. Most excursions are preventable by recognizing well-identified risk factors, adhering to stabilized approach and landing criteria and using accurate and timely runway condition data. The challenge seems to lie with adopting procedures and changing behaviors.
- **Single-pilot accident rate –** Accident rates are consistently higher for single-pilot operated aircraft, being 30 percent more likely to be in an accident than a dual-pilot crew. As one might expect, single-pilot operations are more susceptible to task saturation, and when it increases, the number of errors also grows.
- **Procedural non-compliance –** Professionals are duty bound to comply with federal, state and local regulations, as well as company policies and manufacturer procedures, yet it has been found that non-compliance is a significant contributing factor in aircraft accidents and incidents. Whether professional or not, causes for non-compliance need to be identified and solutions found.
- **Ground handling collisions –** Collisions on the ground involving aircraft, vehicles and buildings result less in fatalities and more in costs associated with the incidents. Not only does it affect those involved monetarily with aircraft repairs, but time out of service and decrease in value are also significant.
- **Distractions –** Disruptions and having too much to keep up with in the cockpit result in loss of situational awareness and continue to be the most prevalent human threat to safety. It is believed that proactive management of personal electronic devices, pressure and other stressors are needed to mitigate the hazard.
- **Scenario- and risk-based training and checking –** It is believed that committing and receiving quality training will make the most positive impact in aviation safety. The new training and checking approach integrates Aeronautical Decision Making and problem solving via scenarios drawn from operator risk profiles. The key to this approach is the need to optimize the balance between learning and checking and refreshing it with the latest safety issues.
- **Airspace complexities –** Overall demand for airspace continues to rise. Whether it be weather impacting traffic flow, NextGen technology integration, or the increase of small unmanned aircraft systems, continued vigilance is required for aviation safety.

When announcing the top safety focus areas for this year, Chairman of NBAA's Safety Committee David Ryan said, "The safety focus areas identified by the Safety Committee underscore the most significant aircraft operations-related risks challenging our industry. Based on the NBAA's Safety Policy, our team is committed to continue collaborating with regulators, members and other industry stakeholders to develop tools and best practices that address these challenges head-on."

In addition to the 2017 list, the Safety Committee continues to promote and focus on its five "foundations of safety," considered the heart of the committee's messaging: professionalism, safety leadership, technical excellence, risk management and fitness for duty.

The NBAA website (*www.nbaa.org*) has several tools on their site that are informational and helpful in relation to the safety areas, as well as other aviation-related subjects.

The Latest on Privatizing ATC

The budget proposed recently by President Trump includes the privatization of air traffic control, calling for a "multi-year reauthorization proposal to shift the air traffic control function of the Federal Aviation Administration (FAA) to an independent, non-governmental organization, making the system more efficient and innovative while maintaining safety."

Shortly after the budget was made public, 16 general aviation advocacy groups joined forces to express their concerns to leaders in the House and Senate in a letter which stated, "The general aviation community has very real and long-standing concerns, which include but are not limited to user fees." Those concerns are based on experiences of other countries that have operated in privatized systems, and produced a negative impact on general aviation.

Before the budget proposal was released, the U.S. Senate appropriation leaders expressed their concerns in a letter to their Senate colleagues stating that creating an independent air traffic control organization would be "devastation [to] a core component of our economy."

It also stated that the "public would not be well-served by exempting any part of the FAA from annual congressional oversight." The annual appropriations process provides the oversight of agency resources necessary to ensure accountability for program performance and a sustained focus on aviation safety. In addition, the "oversight also ensures that the FAA maintains a system that works throughout the aviation industry, including for general aviation, small and rural communities, commercial airlines, and large metropolitan cities."

National Business Aviation Association (NBAA) President and CEO Ed Bolen told attendees at a recent association regional forum that those in the aviation industry need to let their representatives in Washington, D.C., know that privatizing the ATC would be unacceptable. "We've won this at a grassroots level before, because people in our industry have made their voices heard, and that's what we're asking everybody to do again," he said. "The public airspace belongs to the public. We need access to airports, and we need access to airspace. That's why ATC privatization represents a significant threat to our industry. We're going to have to find a way to respond, and it begins with everyone getting engaged." KA

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Auto-Ignition – History and Usage

by Tom Clements

If you were to gather a group of King Air pilots together and ask them their understanding of and usage of the Engine Auto-Ignition system, I will wager that you would receive a wide variety of responses. Some will *arm* it on every takeoff and leave it armed until after landing, while others will use it only when in icing conditions. Some will say it prevents an engine flameout, while others will say its purpose is to provide a relight after the flameout has already occurred. Let me see if I can add some historical context to this system and describe its purpose in detail.

King Air 90 (LJ-1) on its maiden flight. Notice the original clean cowling without the oil cooler scoop.

The very first King Air models did not have an auto-ignition system. In fact, they did not have an ice vane system! "But, Tom, last month you wrote how important ice vane usage is for engine ice protection, and now you are telling me inertial separators weren't even installed on the King Air initially?! How did they fly in ice?!"

As surprising as it is today, after ice vanes have existed for so long, the first model 65-90s (also known as "Straight 90s") used alcohol spray nozzles in the cowling. Similar to alcohol windshield or prop anti-icing, a pump forced the alcohol mixture from a storage tank out through the ejectors. The spray very effectively eliminated the ability for ice to form on the engine intake screen. The system worked quite well … until the alcohol tank went dry. It could sometimes be quite a hassle to find an FBO that could readily refill the tank so complaints were received by Beech's Customer Service department that this alcohol method certainly had its drawbacks.

Before continuing with our main discussion, allow me to add a couple of interesting tidbits. If you look closely at a picture of the prototype King Air or one of its first progeny, you will notice that the cowling is different. It is missing the oil cooler housing, or scoop, on the bottom. Due to the absence of the scoop, the cowling is noticeably cleaner in design. So where is the oil cooler and where is it getting its airflow? It was located near the back of the cowling, below and behind the location where the inlet air turned the corner to reach the engine's inlet plenum. (Its location, in fact, was quite similar to how the oil cooler is housed in the entire 200-series.) Some of the air entering the cowling inlet continues aft to flow across the fins of the cooler instead of being ingested by the engine.

The second interesting tidbit is to point out that it was a good thing that the early King Airs did not use engine bleed air as the pressurization air source! Since that air would be mixed with alcohol when the anti-icing system was in use, the pilots and passengers might be getting a bit higher than the airplane as the alcohol affected their brains! Instead of bleed air, the pressurization source was from a roots blower type of supercharger driven by the left engine. Its intake was located in a place such that no alcohol found its way in.

Back to our main story: In response to the complaints about the inconvenience of refilling the alcohol tank, the Beech engineers came up with an inertial separator system, the first ice vane design. Instead of the well-known T-handles that operate the vanes mechanically via a push-pull cable, the first system deployed the vanes via an air-operated piston/cylinder arrangement. Yes, this air was engine bleed air. All King Airs, even those with superchargers, still utilize "Little P3" bleed air for things like deice boots and, in this case, the ice vane actuators. By the way, the engineers were smart enough to design the system such that if all electric power were lost, the pneumatic actuator would default to the extended position, thus protecting the engine in the event that icing conditions were encountered.

In 1966, the second edition of the King Air series, the A90, replaced the "straight 90," and one of its many large and desirable improvements was the incorporation of the ice vane system replacing the alcohol spray system. But then, a big problem raised its ugly head: Some of the A90s were experiencing loss of engine power due to ice ingestion! In fact, one of the first cases involved a Beech demonstrator A90 with the vice president of sales on board, at night over the Rockies!

"What's wrong?! How can this be?! We tested the system thoroughly and the FAA certified the design! What's going on?!" said the incredulous design engineers. Beech and Pratt & Whitney immediately started a new series of icing flight tests, trying to find why the problem was manifesting itself at this time. It was now the winter of 1966 - 1967. Closed circuit TV cameras were installed in the cowling to try to see what was actually taking place. Time and again Beech sought out icing conditions, flew in them extensively, and yet the airplane came through just fine. It was observed that all the engine flameouts related to them by the operators took place at 16,000 feet or above, so those conditions were emphasized. Weeks elapsed without any problems being discovered.

Then it happened. The Beech test airplane had a double engine flameout due to ice ingestion. The crew got the engines running at a lower altitude – although with compressor damage – and landed safely. The investigation revealed the culprit. With the clarity of 20-20 hindsight it is amazing that no one thought of the problem before, but here it is: The deflected ice particles came in contact with the oil cooler face, the warm oil melted the ice, and the subsequent water blew out the cowling from the aft side of the cooler. What was being overlooked, however, is the little device called the vernatherm valve, the gadget that regulates the flow of oil through the cooler to maintain the desired temperature. Under very cold OAT conditions, all of the oil is bypassing the cooler, so now the deflected ice particles coat the face of the cooler leaving absolutely no other path than directly into the engine intake. Damn! That explains why the problem was only showing up at 16,000 feet and above … due to the cold winter OATs up that high causing the oil to bypass the cooler.

Back to the drawing boards the engineers went – with the FAA in close oversight, since King Airs losing engines in flight had definitely gotten their attention, causing a temporary emergency Airworthiness Directive (AD) to be issued to prohibit icing flight – and two changes were made. First, the oil cooler was relocated to the scoop that was attached to the bottom of the nacelle, so that if and when it was bypassed and iced up there would be no effect on engine airflow. Second, engine auto-ignition was designed and installed.

Prior to this, King Airs had left and right ignition switches so that the ignitors (glow plugs, back then) could be activated without the starters being energized. This was for use while doing windmilling airstarts. But it appeared that too many early King Air pilots – who likely had almost no previous turbine experience – forgot that these switches had to be turned on to relight engines that had suffered a flameout due to ice. ("Heck, it didn't work that way in the P-38 or C-47!") So, both Beech and the FAA wanted a system that would automatically turn on the ignitors when power was lost. The system is comprised of a simple electrical relay that activates the ignitors whenever torque is below about 400 ft.-lbs. when the switches are in the "arm" position. To state the obvious: When an engine flames out in flight, torque immediately goes to zero (actually, a negative value), well below 400 ft.-lbs.

There were so few King Airs in existence at that time – probably less than 150 – Beech set up a modification line at their Salina, Kansas, facility and the airplanes

were flown back "home" for the cowling modification and the addition of the auto-ignition switches and torque sensors. I believe that most, if not all, of the straight 90s were also converted on the line to the new style of system ... at Beech's expense. The Pilot's Operating Manuals (POMs) were revised to include the requirement to arm the auto-ignition switches in icing conditions, as well as at night above 14,000 feet. The clouds were harder to see at night, of course, and a 2,000-foot buffer zone was subtracted from 16,000 feet, the lowest altitude where engine ice ingestion had been problematic.

With the corrected design of the ice vane system, a pilot who uses the vanes at all times when flying in visible moisture with the OAT at 5° C or below will never experience an engine flameout due to ice ingestion. Thus, his arming of the auto-ignition switches provides no benefit. Peace of mind? Sure. Staying in compliance with the airplane's POM? Of course. So we will go ahead and arm the switches. But the need for the ignitors to re-ignite the fuel/air mixture the windmilling engine is still providing following a flameout is nil if the ice vanes are properly used.

Glow plugs were replaced with spark ignitors beginning with the introduction of the 200 model in 1974. Thinking that these new types of ignitors would have an almost infinite lifetime as compared to glow plugs, the decision was made – a bad decision, in my mind – to have the 200 operators arm the auto-ignition switches for all flights, all of the time. It did not take long for Beech to realize that the spark ignitors were in fact life-limited. Too many operators reported that they were replacing these new ignitors nearly as often as the old style. Of course, the reason they were failing is that, with auto-ignition armed at all times, the plugs were actually sparking – and wearing the electrodes – whenever torque was low. Silly as it now seems, the first model 200 checklists had the switches armed from soon after start to right before shutdown, so the ignitors were sparking for most ground operation. A POM revision (actually a POH revision, Pilots' Operating Handbook, since the name and format had been changed by that time) was issued that moved the arming of the switches to the *Runway Lineup* procedure and the disarming came in the *After Landing* section. This direction was carried over into the F90 POH upon that model's appearance in 1978.

Finally, with the appearance of the 300 model in 1984, the Beech checklist writers moved the arming and disarming of auto-ignition back to what it had been in the 90-series: Use for icing conditions and at night when icing conditions may be entered unknowingly.

I would venture to say that most King Air pilots arm auto-ignition when taking the runway on every flight, even when it is severe clear and warm. I know that some King Air training providers advocate this. If that makes the pilots happy, so be it. Nothing is being harmed by doing so except perhaps slightly more plug wear. To replace a few more spark ignitors during thousands of hours of operation makes nary a ripple in the overall cost of operation. But please realize that the system is useless unless a flameout takes place. Although there have been a handful of reports of engine flameouts caused by something *other than* ice ingestion – a condition lever cable rigged too close to fuel cutoff, fuel starvation due to mismanagement – these types of situations are extremely rare. I believe that the propensity to arm auto-ignition on every takeoff comes partly from pilots with jet experience, in which the ignitors can provide a relight following bird ingestion into the engine. Make no mistake, however, bird ingestion cannot and does not happen in a PT6 turboprop.

In summary, I will never state that a pilot is in the wrong if he or she arms auto-ignition for every takeoff and throughout the entire flight. But I hope they will accept that their colleagues are also not in the wrong if they reserve auto-ignition usage for icing flight.

Do you recall the windmilling airstart "envelope?" The POMs/POHs state that airspeed must be above 140 KIAS and altitude below 20,000 feet when conducting this procedure. During my years of conducting inflight training, I can verify that the lower the altitude and the higher the speed, the cooler that starting ITT will be, due to more air entering the engine. Although, as I have written here, use of auto-ignition is a rather moot point if the ice vanes are used properly, nonetheless I have pondered the ramifications of having auto-ignition provide a relight following ice ingestion when cruising at high altitudes. I hope none of us have the experience, but my belief is that there'd be an excellent chance of overtemping the engine if auto-ignition provided an automatic relight up above FL200.

Conclusion? Make sure auto-ignition is armed for icing flight but realize that the proper use of ice vanes nullifies the need for the relight that the ignition would provide. 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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Debonair!

In 1959, Beech Aircraft Corporation took aim at the expanding business flying market by launching the Model 33 to compete with the Cessna "Skylane" and Piper "Comanche."

by Edward H. Phillips

In November 1959, Beech Aircraft Corporation's president Olive Ann Beech challenged the company's global sales personnel to meet the ambitious goal of $60 million in sales during the upcoming 1960 fiscal year. As with other general aviation manufacturers in 1959, Beech Aircraft was recovering from the economic recession of 1958 that drove down sales and profits.

President Beech and her senior management were increasingly aware of gaps in the company's product line, particularly the lightweight single- and twin-engine segments. Since 1957 the Model 95 "Travel Air" had closed the gap between the Model 35 "Bonanza" and the much larger Model 50 "Twin Bonanza," but the model remained the company's entry-level Beechcraft. To further expand its growing "Air Fleet of American Business," in 1959 Beech Aircraft announced development of the Model 33 "Debonair" and promised its worldwide sales organization that the new Beechcraft would be available for the 1960 model year.

Since 1932, the company founded by Walter and Olive Ann Beech had focused on the upper echelon of the private/business flying market and the name "Beechcraft" was known worldwide as the "Cadillac" of small aircraft. In the wake of World War II, however, the general aviation landscape began to change as more and more people started to realize the advantages of flying their own airplane. Throughout the 1950s the number of men and women earning a private pilot's license increased significantly, and airframe manufacturers such as Cessna Aircraft Company and Piper Aircraft Corporation offered a selection of affordable, four-place airplanes. By the mid-1950s these included Cessna's all-metal Model 182 and Piper's welded steel tube and fabric PA-22 "Tri-Pacer," which barely accommodated four adults in its cramped cabin.

By contrast, Beech Aircraft's entry-level airplane was the Model 35 Bonanza that, since its introduction in 1947, had enjoyed immense popularity with pilots who could afford to own one. Beechcraft Bonanza historian Larry A. Ball summed it up well: "For many years the Bonanza had reigned supreme – no other airplane could match its performance. If an aircraft owner wanted to fly

In September 1959, Beech Aircraft Corporation flew the Model 35-33 "Debonair" prototype, registered N831R, marking its entry into the low-price segment of the single-engine, high-performance market. The Debonair, however, was so spartan in its external appearance and cabin appointments that salesmen found it hard to sell against the Piper PA-24 Comanche and Cessna 182 Skylane. (WICHITA STATE UNIVERSITY LIBRARIES, SPECIAL COLLECTIONS AND UNIVERSITY ARCHIVES)

By the 1961 model year, the Model 35-B33 Debonair was a Beechcraft worthy of its name. Overall external paint, improved interior quality, a new instrument panel and the front seat backs were adjustable. In addition, 80-gallon fuel capacity was made an option. The 35-B33 was produced from 1961-1964 and 426 were built. Note the mannequin in a full business suit seated behind the pilot. (WICHITA STATE UNIVERSITY LIBRARIES, SPECIAL COLLECTIONS AND UNIVERSITY ARCHIVES)

faster than his Piper Tri-Pacer or Cessna 182 could take him, he had only one choice. While he could be happy with his choice, Piper and Cessna certainly could not."[1]

In the late 1950s and hot on the heels of its successful, light twin-engine PA-23 "Apache," Piper executives decided to proceed with development of a single-engine airplane that would complement the Apache and provide the Lock Haven, Pennsylvania-based manufacturer with a second strong foothold in the marketplace. Designated PA-24 "Comanche," the four-place airplane featured an all-metal airframe, retractable tricycle landing gear, a vertical stabilizer swept aft to increase aesthetics, and a stabilator for pitch control. In addition, the wing design took advantage of natural laminar flow to help achieve a projected cruise speed of 160 mph. By the time Piper's Comanche made its first fight in the summer of 1956, Beech Aircraft had already sold thousands of Bonanzas and the latest version, the Model G35, was selling for $21,990 for a standard-equipped airplane.[2]

Piper began production of the Comanche in October 1957 for the 1958 model year. Powered by a Lycoming O-360-A1A, carbureted, four-cylinder, air-cooled piston engine and featuring a price tag of $14,500, the PA-24 was quickly embraced by pilots and sales soared. With a maximum speed of nearly 170 mph and a range of 750 statute miles, the new Piper proved to be a tempting alternative to the Bonanza and made selling the Model 35 more difficult.

Not to be outclassed by Piper and its Comanche, Cessna Aircraft, under the capable leadership of Dwane L. Wallace, introduced the high-performance Model 210 in August 1959 for the 1960 model year. Development had begun in 1956 and the first prototype flew in 1957 followed by a second airplane in 1959. The latest addition to Cessna's ever-expanding product line was powered by a fuel-injected Continental engine rated at 260 horsepower, and the airplane was equipped with an electro-hydraulic, retractable tricycle landing gear that gave it a 20-mph speed advantage over the Model 182. Cessna built 577 of the Model 210 in 1960. A standard-equipped airplane carried a price tag of $22,450 compared with $25,300 for a 1960 Model M35 Bonanza (400 built), and about $17,000 for Piper's PA-24-180.

Therefore, by 1959, the Bonanza had not one but two worthy competitors that possessed both high performance and cabin comfort at a lower acquisition cost. Although the Model 210 and the PA-24 were not equal to the Bonanza in every category, "they did join its class of performance and provided for the first time an opportunity for owners of Piper and Cessna airplanes to step up in brand."[3]

In the face of intense competition, Beech Aircraft was for the first time in its history forced to compete on price without sacrificing quality, performance and overall value. It was decided to use "33" for the model number and, after considerable debate, the name "Debonair" was chosen for the new Beechcraft's moniker. When the Model 33 was announced in 1959, Beech officials explained that the word was chosen not because of the modern definition contained in Webster's dictionary, but was actually of old French origin.

Webster defines "Debonair" as someone or something that is jaunty, of good breed, affable and courteous. The French word the company chose, however, was from the medieval period and was derived from "De Bonne Aire." During that time, the word was associated with

a sportsman who trained special hunting hawks, and an exceptional bird was known as a De Bonne Aire (of a good air). Beech Aircraft management was optimistic that the Model 33, too, would also be "of a good air."

The chief challenge was how to establish the Model 33's price while retaining Beechcraft quality. The airplane also needed to look different than the Model 35, upon which it would be based, and the engine had to be of sufficient power and less expensive. As a result, the Debonair featured a standard empennage that would immediately set it apart from the Bonanza, a 225-horsepower Continental IO-470-J engine that was specifically designed for the Model 33 featuring a lower compression ratio and approval to burn 80/87 octane fuel. Finally, the price for a standard-equipped airplane would be $19,995 – slightly higher than the Comanche, but lower than a comparable Model 210.

To achieve that price, many of the Model 35's deluxe features were made optional for the Model 33. Examples included a third cabin window, right side rudder pedals, clock, OAT gauge, sun visors, sensitive altimeter, indicator light for stall warning (no horn), and a fixed assist step for cabin entry/exit. In addition, overall exterior paint was an option. The standard scheme was limited to an accent stripe along the fuselage that carried upward along the vertical stabilizer.

As for performance, the four-place Model 33 had a maximum speed of 195 mph at sea level and a maximum gross weight of 2,900 pounds. Useful load was 1,170 pounds and range (standard, 50-gallon fuel tanks) was 845 statute miles with no reserve. Because the Model 33 was so similar to the Model M35 then in production, the FAA certificated the Debonair under the Bonanza's approval 3A15. The official designation was Model 35-33.

When sales personnel perused the first production Debonairs, they were not impressed. They commented that the airplane, both inside and outside, was much too spartan and, according to some observers, even fell short of a standard Comanche and Model 210! They thought Beech had gone too far to make the Model 33 competitive on price, and at the expense of sales appeal. The only redeeming characteristic was the low price, but after an early surge in orders for the airplane, dealer interest rapidly declined. In short, it was hard to sell the Model 33, and for salesmen accustomed to the Bonanza's quality, the humble Debonair was an ugly duckling and definitely not a "De Bonne Aire."

Despite its lackluster appearance, utilitarian features and less than stellar sales, the Model 33 achieved a respectable production of 233 airplanes for the 1960 model year. Beech officials, however, listened closely to complaints from salesmen and a flood of planned upgrades for the 1961 model year promised to make the Debonair more worthy of its name.

The next version, designated Model 35-A33, received an overall paint scheme, sun visors, improved seat padding, wider, more colorful selection of fabrics, a chart box and a small hat shelf as standard equipment. These and other improvements, however, increased the price for a standard-equipped Debonair to $21,750. In addition,

Beginning in 1970, the factory manufactured five F33C aerobatic versions of the Model F33 Bonanza. No F33C were built in 1971-1972, and the last aerobatic versions left the factory in 1986. The Model G33 Bonanza was the final version of the Model 35-33 series, powered by a Continental IO-470-N rated at 260 horsepower. Only 50 were produced in 1973 before production was terminated. (WICHITA STATE UNIVERSITY LIBRARIES, SPECIAL COLLECTIONS AND UNIVERSITY ARCHIVES)

a new oil sump was installed on the Continental powerplant, changing its designation to IO-470-K.

Performance remained essentially the same as the Model 35-33 except for range, which increased to 1,160 statute miles with optional 70-gallon fuel tanks (840 miles with 50-gallon tanks). Maximum gross weight increased 100 pounds to 3,000 and useful load increased to 1,255 pounds. Beechcrafters manufactured 154 of the 35-A33 for the 1961 model year.

It is interesting to note that for the 1961 model year, Piper Aircraft records indicate that the Comanche was the best-selling airplane in its class. Piper officials claimed that the PA-24-180 captured 39.39 percent of the single-engine, retractable-gear high performance market, compared to 29.38 percent for the Model 35 Bonanza and the Debonair (combined) and 19.26 percent for Mooney Aircraft. Cessna's Model 210 came in a distant fourth at 11.52 percent. These figures, however, clearly indicate that pilots had a wide range of choices and by the mid-1960s an increasing number opted to step up to a high-performance aircraft despite their higher prices.

In 1962, the 35-B33 Debonair received further upgrades as customers demanded more Bonanza-like appointments in the cabin. These included fuel quantity gauges that constantly displayed fuel level, new cabin interior sidewalls, provision for headrests on all four seats; front seat backs were adjustable in flight, and the stall warning light was replaced by a horn.

A few major changes also occurred, the most salient being installation of a new instrument panel deigned for the Model P35, and wing leading edge fuel tanks (80 gallons optional) installed in the production N35 Bonanza. To improve appearance, a small dorsal fillet was added to the vertical stabilizer. Production

The F33A Bonanza was offered in two versions: short or long fuselage. The short-fuselage Model F33A was built only in 1970, and long-fuselage version in 1971, with 26 and 34 airplanes manufactured, respectively. The long-fuselage version cost $41,600. (WICHITA STATE UNIVERSITY LIBRARIES, SPECIAL COLLECTIONS AND UNIVERSITY ARCHIVES)

of the B33 continued from late 1961 through the 1964 model year, and a total of 426 airplanes were built. Price changed during those years from $21,750 to $23,500 in 1963-1964. By comparison, a 1964 Model S35 Bonanza cost $28,750 with standard equipment.

The next major upgrade to the Debonair occurred for the 1965-1967 model years when the 35-C33 inherited the Bonanza's extended fuselage (19 inches). The optional third window was the same design as that of the N35 and P35, and the small fillet forward of the vertical stabilizer was replaced by a graceful dorsal fin.

Inside the cabin, the rear seats were mounted on adjustable tracks to match the front seats, and the rear seat backs were adjustable. Beech also offered four color combinations for exterior paint, and the Bonanza's new, more streamlined cabin assist step was standard. The control wheel was redesigned, maximum gross weight increased 50 pounds, and various improvements to the heating/ventilation systems were made. The 35-C33 was the first Debonair to approach the Bonanza in appearance and interior appointments, and customers bought 305 of the much-improved Beechcraft.

Another major improvement came in 1966 when Beech engineers made the Continental IO-520-B engine standard on the Model 35-C33A Debonair, beginning in February. The six-cylinder powerplant developed 285 horsepower at 2,700 RPM, and both takeoff and maximum continuous power were the same. The cylinders featured nitrided barrels for improved durability, pistons were lubricated by squirting oil, and an oil filter was installed along with a decongealing oil radiator. The C33A also featured the new engine cradle used on the S35 that was canted downward two degrees and offset to the right two-and-a-half degrees to help reduce rudder forces during takeoff and climb.

The engine change was made to offer owners of older Debonairs the opportunity to trade their Beechcraft for one that was nearly equal to the new V35 Bonanza, thereby enjoying higher performance and overall value. Another reason was market-driven: The C33A would compete more favorably with the Piper PA-24-260, introduced in 1965, that featured a 260-horsepower Lycoming O-540-E4A5 engine.

To make the C33A stand out in a crowd, the airplane was given a unique paint scheme. The IO-520-B-powered C33A was manufactured for only two years, 1965-1966, and 179 of the airplanes were delivered. Initially the C33A was priced at $29,875, but increased to $31,000 beginning at serial number CE-134. The price of a 1967 V35 Bonanza with standard equipment was $32,500.[4]

By 1968. Beech Aircraft Corporation workers had built more

than 1,000 of the Model 35-33 series Debonair, and management came to the realization that the company was marketing two versions of the same airplane. The Debonair was so similar to the Bonanza in every respect that the decision was made to drop the name "Debonair" and sell that airplane as a straight-tail Bonanza.

The Model E33 was the first to carry the new name, but still retained the 225-horsepower Continental IO-470 engine and 50-gallon standard fuel capacity that set it apart from the V35A. A third cabin window and the new "Speed Sweep" one-piece windshield were made standard. The E33 sold for a base price of $31,750, and 116 airplanes were manufactured during the 1968-1969 model years. A second version known as the E33A was available with the IO-520-B engine rated at 285 horsepower, and sold for $35,750. Only 79 were built.

In addition to the giving the customer a choice of engines, Beech engineers developed an aerobatic option for the Model E33 designated E33B and E33C. Both were certificated in the Acrobatic Category at a maximum gross weight of 2,800 pounds, or could operate in the Utility Category at a gross weight of 3,300 pounds. The airframes were reinforced for aerobatics, and during maneuvers only the front seats were occupied. A quick-release door was standard along with a G-meter, shoulder harnesses and a special fuel boost pump for inverted flight. The E33B/E33C were approved for inside loops, aileron and barrel rolls, Immelman turns, Cuban eights and split-S. Because of the limited appeal of these airplanes, customers preferred the 285-horsepower E33C, of which 25 were manufactured. No E33B models were built. Price of the E33C was $38,250.

The 1970 F33 Bonanza was a slightly refined E33 and was among the last of the short-fuselage 35-33 series. It sold for $34,150 but only 20 of F33 were built before production shifted to the F33A for the 1971 model year. Beech Aircraft offered a short- and long-fuselage option and 26 of the former were built compared with 34 of the latter. The 1971 F33A finally offered customers all of the V35B's glamour, both inside and out, with the only difference being the empennage. Maximum speed was 208 mph while maximum gross weight was increased to 3,400 pounds. The short-cabin F33A sold for $38,150 and the longer edition cost $41,600.

It should be noted that in 1970 the company built five F33C aerobatic versions but none were produced for the 1971-1972 model years. In 1986, 23 F33C were built including 21 for the Mexican Air Force. Beginning in 1973, all of the F33A and F33C Bonanzas featured the longer fuselage. By the late 1980s the price of a Bonanza, regardless of which empennage a customer chose, had increased astronomically. For example, a 1987 F33C cost $184,500.

One other special version of the 35-33 series Bonanza is worthy of mention – the Model G33. Created for the 1972 model year, the G33 filled the gap left in the product line by the 1970 F33. The G33 featured a Continental IO-470-N engine rated at 260 horsepower at 2,625 RPM (same as the 1963 P35 Bonanza), and the all-new interior and instrument panel installed across the entire Bonanza product line. Priced at $41,450, only 50 of the rare G33 Beechcraft were built before production ended in 1973.

More than 1,250 of the Model 35-33 were built from 1960-1973. As of 2016, these sturdy and fast Beechcraft airplanes still are in demand and bring strong prices on the used aircraft market. The same is true of the V-tail Model 35 Bonanza series, of which 10,403 were built during a period of 35 years. Production ended in 1982. KA

NOTES:

1. Ball, Larry A.: *"Those Incomparable Bonanzas;"* McCormick-Armstrong Co., Inc., Wichita, Kansas, 1971.
2. Phillips, Edward H.: *"Piper – A Legend Aloft;"* Flying Books International, Eagan, Minnesota, 1993.
3. Ball, Larry A.: *"Those Incomparable Bonanzas."*
4. Ibid

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.

AvFab Receives EASA Approval for King Air 200 Pleated Window Shades

Aviation Fabricators (AvFab) has received European Aviation Safety Agency (EASA) Certification #10061033 for the installation of its pleated window shades for King Air 200, B200 and B200GT series aircraft. The AvFab pleated window shades provide King Air owners/operators with a contemporary look. The shades replace the factory-installed polarizers and help keep the aircraft's interior remarkably cooler on the ramp as the shades can be closed when the aircraft is parked, unlike the polarizers.

AvFab's pleated window shades are available in several colors. The flame-retardant shades are produced using a low/no emission process. The shades have an antibacterial coating and provide excellent sun protection with as low as four percent light transmission, and heat reflection up to 75 percent which results in less sun damage to the aircraft's interior. They have insulating properties with a reduction of heat loss of 20 percent. They contain no toxic content and won't produce toxic smoke or gases during the event of a fire.

Contact AvFab at (660) 885-8317 or visit *www.AvFab.com* for more information.

Textron Aviation Expands 1CALL and Introduces 1View

Textron Aviation announced it has expanded its 1CALL offering for Cessna Citation, Beechcraft King Air and Hawker customers operating in Central and South America. Working with its regional channel partners, TAM Aviação Executiva (TAM) and Central Charter de Colombia (Central Charter), the company is providing AOG support tailored to meet the unique needs of customers throughout the region.

Citation, King Air and Hawker customers around the world needing immediate support can contact the 1CALL team 24/7 by dialing +1 (316) 517-2090. 1CALL provides a single point of contact during unscheduled maintenance events and offers prioritized technical support, expedited parts ordering, alternative lift solutions and mobile service unit scheduling. For AOG events in Central and South America, the 1CALL team now works directly with its in-region channel partners to expedite parts and mobilize AOG support.

Representing the company in Brazil since 1982, TAM is a Textron Aviation sales channel partner and authorized service facility, offering integrated services such as aircraft maintenance, fixed based operations, aircraft management and aircraft charter.

With more than 36 years of experience in business aviation, Central Charter is an authorized service facility supporting Textron Aviation customers in Central and South America. Central Charter's highly experienced team of technicians provide complete aircraft maintenance, repair and overhaul services.

Textron Aviation also recently announced the launch of its

innovative technical publications platform, where Beechcraft, Cessna and Hawker customers can access all maintenance manuals, flight documents and service information for their aircraft.

The company says 1View provides a simple, easy-to-use platform to access all technical manuals and flight documents. Designed with accessibility and ease-of-use in mind, the all-in-one system combines the best functionality of the well-known Cesview and Interactive Maintenance Libraries (IML). The 1View platform includes advanced features such as single sign-on, the ability to add annotations, E-commerce integration to generate part order lists, enhanced search features, history tracking and bookmarking.

Western Aircraft Launces Smartphone App

Western Aircraft, Inc. now has a smartphone app to provide customers with easy access to contact information regarding Aircraft on Ground (AOG), Fixed Base Operations (FBO), Over-the-Counter Parts and MRO sales and maintenance.

The newly released app which works online and offline is available for free download on iOS™ and Android OS platforms. Just search Western Aircraft or access the appropriate stores.

For more information about Western Aircraft and its capabilities, go to *www.westair.com.*

LoPresti Aviation Now has ATU Technology for Aircraft Lighting

Now with the newest ballast design, LoPresti has added an ATU circuit to automatically increase the light output of landing lights while keeping the electrical load low.

The BoomBeam lights:

- Produce 500 percent more light, engineered specifically for each model aircraft.
- More closely approximate the color temperature of natural daylight.
- Offer five year/5,000-hour warranty, a proven system based on time-tested experience.
- Reduce electrical load and heat.
- Decreases AOG time for lighting issues, no filament to break.
- FAA STC and PMA for hundreds of make/models including King Airs.

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

Service Bulletin 34-4170: Navigation – Fusion Equipped King Air 200/300 Electronic Standby Instrument System (ESIS) – Magnetometer Relocation Kit

Issued: March 2017

Effectivity: Super King Air Model B200GT, Serial Numbers BY-207, BY-239, BY-250 thru BY-291; Super King Air Model B200CGT, Serial Number BZ-1; Super King Air Model B300, Serial Numbers FL-954, FL-1010, FL-1031 thru FL-1093; Super King Air Model B300C, Serial Numbers FM-66 thru FM-71.

NOTE: No further action is necessary for the following airplanes on which Kit 434-3013 has been accomplished: B200GT, Serial Numbers BY-268 thru BY-276, BY-278 thru BY-286, BY-288 thru BY-291; B300, Serial Numbers FL-1050, FL-1052, FL-1062, FL-1072 thru FL-1074, FL-1076 thru FL-1079, FL-1082 thru FL-1093; B300C, Serial Numbers FM-67, FM-69 and FM-70.

Compliance – Recommended: This service bulletin should be accomplished within the next 200 flight hours, but no later than 24 months, whichever occurs first.

A service bulletin published by Textron Aviation may be recorded as *completed* in an aircraft log only when the following requirements are satisfied:

1) The mechanic must complete all of the instructions in the service bulletin, including the intent therein.
2) The mechanic must correctly use and install all applicable parts supplied with the service bulletin kit. Only with written authorization from Textron Aviation can substitute parts or rebuilt parts be used to replace new parts.
3) The mechanic or airplane owner must use the technical data in the service bulletin only as approved and published.
4) The mechanic or airplane owner must apply the information in the service bulletin only to aircraft serial numbers identified in the Effectivity section of the bulletin.
5) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service bulletin, service letter, or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document, unless the maintenance is accomplished at a Textron Aviation Authorized Service Center.

Reason: Fusion equipped King Airs experiencing heading errors on their ESIS displays can relocate the ESIS magnetometer from the canted bulkhead to the aft end of the tailcone, per field service kit 434-3013-0001.

This new location will provide enhanced accuracy for the ESIS system.

Description: This service bulletin provides parts and instructions to install field service kit 434-3013-0001. This kit should be installed if magnetometer is located under the panel as defined in step one of the Accomplishment Instructions.

Service Bulletin 30-4166: Ice and Rain Protection – Air Intake – Ram Air Recovery System

Issued: March 2017

Effectivity: Super King Air B200GT, Serial Numbers BY-122, BY-128 thru BY-278 with Raisbeck Engineering Ram Air Recovery System (STC SA3366NM) installed.

The equivalent of this service bulletin has been incorporated on production airplanes BY-279 and On for the brush issue and BY-222 and On for the remainder of issues.

Compliance – Recommended: This service bulletin should be accomplished within the next 200 flight hours or 12 months, whichever occurs first.

A service bulletin published by Textron Aviation may be recorded as "completed" in an aircraft log only when the following requirements are satisfied:

1) The mechanic must complete all of the instructions in the service bulletin, including the intent therein.
2) The mechanic or airplane owner must use the technical data in the service bulletin only as approved and published.
3) The mechanic or airplane owner must apply the information in the service bulletin only to aircraft serial numbers identified in the *Effectivity* section of the bulletin.
4) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service bulletin, service letter, or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document,

unless the maintenance is accomplished at a Textron Aviation-owned and Textron Aviation-authorized Service Center.

Reason: This service bulletin is being issued to do a one-time inspection for Textron Aviation-approved factory installed Raisbeck Ram Air Recovery System (RARS) and to verify rigging as required per Raisbeck STC SA3366NM and Raisbeck Engineering Document 93-1021.

Description: This service bulletin provides parts and instructions to inspect the Raisbeck STC SA3366NM installation to verify that parts were installed and rigged properly per STC Installation Document 93-1021 (Installed at Revision F dated December 19, 2007, Revision G dated January 11, 2011, and Revision H dated December 4, 2015). Refer to current Raisbeck installation documentation at *www.raisbeck.com*.

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

PWI, Inc. KAR 200 Dimming Issue Service Bulletin

Issued: January 2017

Effectivity: King Air 90, 100, and 200 series

Compliance – Optional: This change is not required as it is a purely aesthetic change.

Reason: This Service Bulletin is being issued to address the concerns of some customers that the KAR 200 dimmer switch does not produce a noticeable change.

Description: This Service Bulletin provides instructions and diagrams that show how to make the KAR 200 dimmer switch create a more noticeable dimming effect. The problem is that, for some customers, the dimmer switch is set at too low of a setting and this can be solved by using a soldering iron to move the wire attached to the middle of the resistor to the far right connector.

Warranty: There is no warranty associated with this Service Bulletin as it is a non-mandated change.

Link: The full service bulletin with exact instructions and pictures for the process can be found at: *http://pwi-e.com/wp-content/uploads/2017/02/PWI-Service-Bulletin-02.pdf*

ADVERTISING INDEX

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