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Courtesy of Wheels Up Cares

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Mission²

Special Wheels Up fleet spreads charities' important missions

by MeLinda Schnyder

Currently there are four Wheels Up Cares special edition King Airs: pink in support of breast cancer, teal advocating for ovarian cancer, red bringing focus to cardiovascular heath and the most recent, camo, in support of TAPS (Tragedy Assistance Program for Survivors).

“We created the Wheels Up Cares program to showcase our support of important causes by leveraging our fleet of aircraft ... The four planes in the program are flying symbols of these charities’ incredible missions and we are proud to align with TAPS for our latest addition to the fleet.”

Kenny Dichter
Co-founder and CEO
Wheels Up

Starting with the first Beechcraft King Air 350i that Wheels Up took delivery of in 2013, all but four of the 72 King Airs to join the fleet of the private aviation company have the same stylish blue and white paint scheme featuring the word “UP” on the tail. Those exceptions are the aircraft that belong to the company’s philanthropic initiative, Wheels Up Cares.

Dr. Elisa Port, Director of the Dubin Breast Center of the Tisch Cancer Institute at Mount Sinai and Chief, Breast Surgery, Mount Sinai Health System accompanied the Wheels Up team to Wichita, Kansas, when the first Wheels Up Cares King Air 350i was delivered. "I had the chance to meet many of the people on the assembly line and a woman there had recently died of breast cancer," she recalls. "Everyone who had worked on the line had her in their thoughts while finishing this pink airplane. It became a labor of love and the airplane connects with people."

(Photo credit: Mount Sinai Health System)

The custom livery has turned pink, teal, red and, as of last month, camouflage to create one special edition Wheels Up airplane in four of the past five years. The camo airplane rolled out during National Veteran and Military Families Month to honor those in the military who bravely served and continue to serve.

Each of the four aircraft representing Wheels Up Cares supports a nonprofit organization financially and by making passengers and fellow aviators aware of the cause when they see the unique color scheme. Tragedy Assistance Program for Survivors, also known by its acronym TAPS, offers compassionate care to anyone grieving the death of a loved one who died while serving in the military, including by suicide.

Dave Kaufman, Wheels Up co-founder and chief flight officer, said the company created Wheels Up Cares to meet what the leadership team felt was a corporate responsibility to use their platform to support and help others.

"We hope to add one or two a year to the fleet that will be there permanently and that speak to a cause that our membership supports," he said. "For example, the teal plane is in support of the Janet Burros Memorial Foundation and the inspiration comes from Wheels Up members Mara Sandler, who is Janet Burros' daughter and advocate, and Mara's husband, Ricky. With the camo plane, many of our employees as well as the pilots assigned by Gama Aviation that fly Wheels Up aircraft have served or have loved ones that have served in the military."

There was also a connection between Wheels Up and TAPS. Admiral Mike Mullen, a retired U.S. Navy admiral who served as the 17th chairman of Joint Chiefs of Staff, is a senior strategic advisor to Wheels Up and his wife serves on the TAPS board of directors.

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How the initiative works

After the unveiling of each Wheels Up Cares aircraft, the company makes a donation to the supported organization or organizations it is collaborating with. All pilots flying Wheels Up planes wear lapel pins throughout that initial month that match the airplane's color.

After their introduction, the aircraft remain in the Wheels Up fleet so that their eye-catching paint schemes will continue to raise awareness for each cause.

"Wheels Up creates educational materials that are placed onboard each of the four planes in the program," Kaufman said. "We want every member and their passengers to understand the significance of the special aircraft and to have information on the philanthropic partner that the aircraft flies in support of."

The response, he said, has been overwhelming.

"Every day we receive emails from members, employees and pilots expressing their pride and excitement about seeing the Wheels Up Cares planes on the ramp," Kaufman said. "A member recently told us that as a veteran, he couldn't imagine a better way to feel appreciated and recognized for his service than with this flying symbol of support."

Based in New York, Wheels Up has more than 6,000 North American members and is currently in its seventh year. Those members are guaranteed access to a Wheels Up fleet of more than 115 aircraft up to 365 days a year with as little as 24 hours' notice and at fixed hourly rates for time flown only. In addition to the King Air 350i, the fleet includes Hawker 400XP, Cessna Citation Excel/XLS and Citation X aircraft. Wheels Up does not operate the aircraft; Gama Aviation operates and manages the fleet.

In a 2014 King Air magazine article about the launch of Wheels Up, co-founder and CEO Kenny Dichter explained that his past experience founding Marquis Jet, which sold thousands of jet cards to individuals and businesses, led him to create the Wheels Up membership model and to execute what was at the time the largest business aircraft order for twin turboprop aircraft in general aviation history: Up to 105 new King Air 350i aircraft and with factory service as the acting maintenance provider, a deal valued at $1.4 billion.

"I learned that fractional jet owners were, on average, flying distances of just under two hours. I saw a gap in the market and identified the King Air as an ideal aircraft, giving birth to the idea of Wheels Up," Dichter said at the time, explaining that the 350i was attractive to a new segment of private aviation he wanted to reach as well as the experienced private flyer.

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LEARN MORE

Visit these websites to learn more about the nonprofits and organizations supported by the Wheels Up Cares fleet:

TAPS: *www.taps.org*

American Heart Association: *http://www.heart.org/*

Simon's Heart: *www.simonsheart.org*

Janet Burros Memorial Foundation: *http://www.janetburros.org/*

Dubin Breast Center of The Tisch Cancer Institute at Mount Sinai: *https://www.mountsinai.org/locations/dubin-breast-center*

The pink King Air 350i that launched the Wheels Up Cares program continues to raise general awareness for Breast Cancer and the Dubin Breast Center of The Tisch Cancer Institute at Mount Sinai in New York City.

He added: "The Beechcraft King Air 350i is the perfect aircraft for Wheels Up due to its proven track record, tremendous flexibility and its efficiency for regional travel. It is a much more cost-effective way to fly short-haul missions, providing access to hard-to-reach places, but with all the creature comforts. It also provides the segment's greenest aircraft, taking more passengers farther on less fuel for consistent savings with the lowest operating cost per seat mile."

The Wheels Up Cares fleet

OEM Textron Aviation and Wheels Up have worked together to conceptualize and design the exterior paint schemes for the four aircraft. For example, on the camouflage airplane they tried out several camo patterns before landing on U.S. woodland camo and selecting the colors within the design. Many concepts were created and a variety of colors tested including matte versus glossy paint. The result is four greens and one white in standard glossy paint.

Textron Aviation completes the painting process in Wichita, Kansas. The first step in painting the camo aircraft, a 2014 King Air 350i, was to strip the aircraft from its current paint. Once the aircraft was stripped the paint team started by painting the lightest color. Then, using a vinyl mask to protect the previously applied color, each additional paint color was layered on top. Once all four colors had been added to the white base coat, the paint team went back through for final touchup.

Here's a look at the four King Air 350i aircraft now flying in the Wheels Up Cares fleet.

The Camo King Air

Bonnie Carroll founded TAPS two years after the death of her husband in an Army C-12 plane crash on Nov. 12, 1992. A retired Air Force major, she received the Presidential Medal of Freedom in 2015 for her ongoing efforts through her military career and TAPS to provide support to the families of fallen service members.

She found few resources when she needed them, so she built TAPS from the ground up. Over the past 25 years, the organization has assisted about 90,000 people grieving a relative or friend who died while serving in the military. TAPS averages 19 new survivors seeking assistance every day and pairs them one-on-one with a volunteer peer mentor who has suffered a similar loss, whether the match is relationship to the deceased, manner of death, branch of the military, geography or another factor.

TAPS connects survivors with grief and trauma resources and also runs its own programs, from seminars and retreats for adults to camps for children. They operate a national resource and information helpline for all who have been impacted by a death in the Armed Forces.

Because the organization receives no government funding and survivors pay nothing for support, donations and spreading the word about their services through efforts like Wheels Up Cares are vital.

"Our organization is funded entirely by donations from individuals, foundations and corporations," said Katie Maness, TAPS' senior advisor and director of

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development. "TAPS operates on a very lean budget with 88% of every dollar invested in programs, resources and services for military families. To keep our costs low, TAPS has only one headquarters location in Arlington, Virginia. Most of our staff work out of borrowed office space or their homes so they are closer to the survivor communities."

One new element of this latest Wheels Up Cares aircraft is a limited-edition desktop replica of the camo plane available for purchase, with proceeds from sales going to TAPS.

"Wheels Up is a perfect partner for TAPS because they are a company that values quality service delivery, employs military veterans and honors the sacrifices of our armed forces," Carroll said.

The Red King Air

In February 2018, Wheels Up rolled out its red King Air in conjunction with American Heart Month and it continues to fly as a reminder of the importance of cardiovascular health. It supports the American Heart Association (AHA) and Simon's Heart, a nonprofit started in memory of a three-month-old who died from an undetected heart condition while taking a nap.

Simon's Heart has raised more than $2 million that it spends on efforts to raise awareness about the warning signs and conditions that lead to sudden cardiac arrest and death in children and to improve detection, innovation and reaction, such as making more defibrillators available.

The American Heart Association funds cardiovascular medical research, educates consumers on healthy living and fosters appropriate cardiac care in an effort to reduce disability and deaths caused by cardiovascular disease and stroke. According to the AHA, heart disease (including coronary heart disease, hypertension and stroke) is the No. 1 cause of death in the U.S.

"Our work would not be possible without the generous support of committed companies like these who provide donation opportunities to their customers," American Heart Association board member James Postl said at the airplane's roll out in 2018. "These corporate citizens provide a force multiplying impact to our work and help us get ever closer to a world without needless suffering or death."

The Teal King Air

The teal plane made its inaugural flight in the Wheels Up Cares fleet in Sept. 2016, taking advocate and ovarian cancer survivor Sherry Pollex to the Ovarian Cancer National Conference. Pollex, who at 35 years old in 2014 was diagnosed with stage three ovarian cancer, and boyfriend Martin Truex, Jr., of NASCAR fame, partnered with Wheels Up on the event.

September is Ovarian Cancer Awareness Month and the ongoing nonprofit connected to this airplane is the Janet Burros Memorial Foundation, established to raise awareness and to support the early detection, prevention and treatment of ovarian cancer. The foundation holds an annual golf tournament in Greenwich, Connecticut, that has raised $6 million. Organizers said their funds are currently being allocated to efforts to identify the illness earlier and to personalize treatment protocol for patients with specific variants of ovarian cancer.

This year about 22,530 women will receive a new diagnosis of ovarian cancer and about 13,980 women will die from the disease, according to the American Cancer Society. Only about 20% of ovarian cancers are found at an early stage.

The Pink King Air

The pink plane was the 45th new aircraft delivered to the Wheels Up fleet in August 2015 and it launched the Wheels Up Cares program. They waited until October to coincide with Breast Cancer Awareness Month and the airplane continues to be linked to raising general awareness as well as for the Dubin Breast Center of The Tisch Cancer Institute at Mount Sinai.

The New York City center is one of the world's top facilities for breast cancer treatment and research, offering a full range of highly personalized, multidisciplinary services, according to Elisa Port, MD, director of Dubin Breast Center of the Tisch Cancer Institute at Mount Sinai and chief, breast surgery, for the Mount Sinai Health System.

"Our whole center depends on supplemental philanthropy," she said. "We give the highest level of care to patients regardless of their ability to pay and our level of care includes support services that insurance doesn't always reimburse for."

Wheels Up did not provide the amount of financial contributions it or its members have donated to the nonprofits but did share data on how the three previously flying aircraft have been used to raise awareness: 11,657 passengers flown on 6,243 total flights landing at 1,529 unique airports.

"It's a really inventive and ingenious way of generating philanthropy," said Port, who traveled with Wheels Up to Wichita to take delivery of the pink King Air in 2015. "Breast cancer is the most common cancer diagnosed in women in this country besides skin cancer. So in my mind, there can never be enough awareness. This is going to happen to one in nine women in their lifetime. If that airplane reminds even a few people over the course of a year to get a mammogram or to go get checked, it's been purposeful." KA

Bucket Lists, Part II: Be a Box Checker!

by Matthew McDaniel

Author's Note: The following is the second installment in a series of articles which may resonate with King Air corporate and charter pilots as it relates to making the most of travel downtime. But it can also apply to the owner/pilot, whether it's making a stop on the way to a planned destination or adding a future destination to visit. After all, making the most of layovers and planned or unplanned travel downtime is a goal any pilot can pursue. If you have layover pursuits or places you've enjoyed and feel are "must sees," please feel free to drop the author an email with any ideas you might have for future installments of this series (contact information follows the article).

In Review

In Part I of this series, we introduced the concept of list making. A sort of bucket list, used to enhance your layovers (long and short) by encouraging you to get out and explore, checking boxes off your list(s) along the way; or by making a stop on your way to a planned destination or making the bucket list visit a future destination itself. Starting a list or two is Step 1, but checking the boxes is the real goal. When surplus time is in your day's clock, exploration is hard to beat for using that time to remind yourself that flying really can take you to interesting places.

Fallingwater House in rural Pennsylvania is less than an hour's drive from Pittsburgh. It has long been considered the crown jewel of Frank Lloyd Wright's long architectural design career. The integration of the home to its natural surroundings is stunning. Built in 1935, its cost would have been approximately $3 million today.

During my many years of flying as a corporate, charter, fractional, airline and traveling-instructor pilot, I've had many layover lists running concurrently. Today, I'll discuss one of my more successful lists, if progressing steadily through said list is the gauge for 'success.' Along the way, we'll touch on some related list types that might better suit your personal style or interests.

Architecture

OK, I admit it. I'm an official history geek. I love history and all the different avenues of interests it can lead to. History is the topic that never ends and nearly any human-interest you name has historical ties that bind it together. For me, one of those interests is architecture. No, I'm not an architect, nor do I have any desire to be one. But I grew up in a small Midwestern town that has been world renown for decades for its abundance of notable modernist and postmodernist architecture. The founders of Columbus, Indiana, made a commitment early in the city's history to hire prominent architects to design unique buildings. Prominent and philanthropic citizens and corporations have kept that commitment alive for well over a century. Dozens of churches, the public library, most of the schools, banks, office buildings, fire stations, the courthouse, city hall, malls and even the jail all display panache and character not often associated with such utilitarian buildings. The city consistently ranks in the Top Ten U.S. Cities for Modernist Architecture, with eight buildings on the National Historic Register and over 60 buildings considered to be outstanding examples of modernist architecture. As a result, Columbus has earned the nickname, "Athens of the Prairie." One can scarcely grow up in such an environment without having some lingering appreciation for fine architecture, even long after life has rendered me far removed from my hometown.

Often being both technically and historically minded, I've found many pilots seem to share my appreciation for architecture. Some prefer historical buildings, with their organic materials and hand-crafted details, while

Spring flowers brighten the grounds of the West Virginia State Capitol Building in Charleston. Constructed between 1924 and 1932, it has recently undergone significant preservation efforts to ensure its future for another century and beyond. Its 333 rooms and 535,000 sq. ft. of floor space dwarf many other state capitols, even some in states much larger than West Virginia (both in size and populace).

others lean toward the cleaner lines of more contemporary, modern or post-modern buildings. Whatever your taste, layovers in cities and towns of nearly any size can offer something architecturally interesting to see. As with the museums discussed in Part I of this series, web searches can help you develop a wish list of must-see buildings, organized by style, purpose or era. Some potential ideas to get you started might include:

Architectural Tours: Many cities offer formal tours of their architectural sites. Such tours come in a variety of forms. In New Orleans, Louisiana, tours via horse-drawn carriage are popular (especially through the narrow streets of the French Quarter or the Garden District). In Chicago, boat tours along the Chicago River allow that city's famous architecture to be viewed easier than from street level, opening up wider angle sight lines. In Philadelphia (and other cities), similar tours are offered via amphibious vehicles (known as "Ducks") that both drive the streets and cruise the waterways. While in countless cities, big and small, architectural bus or van tours are available at reasonable rates. If you want to get some exercise at the same time, walking tours (both guided and self-guided) are popular in many cities around the globe.

Architects: Build a list around a specific architect. Some are quite famous, like Frank Lloyd Wright or I.M. Pei and have well-known buildings in cities the world over. Others may not be as well-known but are equally prolific designers.

Styles: Specific styles can be pursued in large or small categories. For me, the stylings of 1930's-era Art Deco buildings never fail to captivate. Due to their age and their heyday having been relatively short, finding well preserved examples is becoming increasing rare. But they certainly look like nothing else being built in the modern era. The Empire State Building in NYC is probably the most famous example.

Manor Homes: The grand palaces of the industrial Barons of yesteryear top this category. Though, most towns of even moderate size have one of more manor homes built by whomever was at or near the top of that area's net-worth pyramid at the time. Usually a citizen that was proud of wherever they called home and was happy to build a no-expense-spared residence to prove it. Thus, such homes range in size from modest (by today's standards) to literal castles. What they all have in common is magnificent old-world craftsmanship, abundant character and attention to every detail. Those built on the grander scale took large staffs and massive annual budgets to run, making so many of them white elephants as subsequent generations inherited them. Far too many have been lost to the wrecking ball, deemed too expensive to maintain. Those that have survived often resort to giving tours and renting their glorious spaces for weddings and large events to cover their monumental operating budgets. However, because they need every penny to keep the bills paid, walk-up tours are often available and offered at reasonable prices. The best-known example is probably The Biltmore Estate, in Asheville, North Carolina, built by railroad giant George Vanderbilt. It remains the largest private residence ever built in the U.S., exceeding 178,000 square feet. Other examples, in decreasing scale, include Hearst Castle in San Simeon, California, by newspaper and publishing tycoon, William Randolph Hearst, the Pabst Mansion in Milwaukee, Wisconsin, of beer Baron, Capt. Frederick Pabst, and the Culbertson Mansion, in New Albany, Indiana, – now a suburb of Louisville, Kentucky – built by William Culbertson, once the richest man in Indiana from his dry goods and investment empire. The first two have become major attractions and are priced accordingly, while the latter two remain less publicized and reasonably priced.

Capitol Buildings

I have an ongoing list of U.S. State capitol buildings I've been checking the boxes of for many years. These government buildings vary dramatically in architectural style and grandeur. Some, like the Illinois Statehouse in Springfield, can compete with the U.S. Capitol Building for beauty, splendor and even scale. Others, like North Carolina's Statehouse in Raleigh, are far more diminutive, but are still loaded with character and old-world craftsmanship. A few, like Maryland's Statehouse in Annapolis, are quite aged and show it in their uneven floors, roughly hewn timbers, and steps worn by centuries of foot traffic. In newer capitol buildings, like North Dakota's in Bismarck or Hawaii's in Honolulu, you'll be hard pressed to find a single element reminiscent of the columned, domed, marbled capitols which typically come to mind. Instead, you'll find modernistic-styled office buildings. Nonetheless, they all offer something unique architecturally, and copious amounts of state history come rushing at you from within their walls, statues, busts and sculptures.

Touring State Capitol buildings is as easy as walking through their doors during normal business hours (some even offer extended hours for tours). Admission is almost always

The Grand Masonic Temple in Philadelphia is one of only three "Grand" examples of Masonic Temples worldwide. While its grand exterior is impressive, its interior is truly stunning in both detail and scale. Guided tours are available without appointment for a modest fee.

The Milwaukee Art Museum is one of the largest and most architecturally bold art museums in the U.S. It is often referred to simply as "The Calatrava," though that is actually only one building of the 25,000+ sq. ft. complex. The "Brise Soleil" is the foldable wing-like structure which spans 217-feet. The wings open and close daily, generally remaining closed only at night and in inclement weather conditions. Built on the shore of Lake Michigan, it is said that when viewed from the water, the building resembles the bow and sails of a great sailing ship headed out to sea.

free, and security will typically require no more than a walk through a metal detector and presentation of a government issued I.D. Building maps and history brochures are generally offered for self-guided touring. However, most State Capitol's also offer guided tours on a schedule (also usually free). If you happen to find yourself there at the right time, you can rest in a gallery seat while watching the wheels of government turn on the floors of the state Senate or statehouse of Representatives below you. Next time you're in a capital city, visit the Capitol building (and impress your friends by knowing that spelling it with an "a" refers to the city, while using an "o" refers to the building).

Courthouses

Not in a state capital city? Don't give up and cage yourself at the

FBO! Each county in each state has a city or town designated as the county-seat (or the home of that county's governmental affairs). In all but the smallest of the hundreds of county seats within the U.S., a County Courthouse building is designated. Many are simply stunning buildings, offering free self-guided touring to all comers. Scores of them are historical enough to be included on the National Historic Register and include significant architectural elements (especially for the times they were constructed). The same can be said of many City Hall buildings. In Philadelphia, for example, the City Hall is one of the most prominent structures among a city teeming with architectural masterpieces. Philly's City Hall not only forms the center of the downtown's geography, it dominates the scene, covering a full city block and towering above the height of the U.S. Capitol building! Wherever you find yourself, governmental buildings tend to be some of the most interesting any given city has to offer. Plus, since they were constructed and are maintained with tax dollars, they are publicly owned and should be open to all citizens.

Houses of Worship

Ever been to a town without a single church, temple or other house of worship? Such towns are few and far between. Many houses of worship are simple structures that would not register on anyone's must-see architecture list. Yet, even in tiny towns, the most prominent, most beautiful building is often a church or temple of some kind. Religious structures, of course, have an incredible variation. Cathedrals and bassillicas, tabernacles, grand mosques and temples, and everything in between, down to tiny, one-room, country churches. Nearly all have something unique to see. Climb a bell tower for a magnificient view of the town or even a distant metropolis (on a clear day). Be accidently treated to a concert by a gifted organist, playing a centuries old pipe organ (practicing for upcoming services or learning new pieces). Be amazed at the towering columns or the ornate architectural elements. Study the details and nuances of statues depicting holy scenes, saints or religious deities. Try your hand at interperting the scenes depicted in delicate stained glass windows. These are all things I've experienced simply by walking into some previously unknonwn (to me) house of worhip. You need not be affiliated with the religion or belief system the building represents to appeciate its attributes. Art is a universal passion that nearly every religion pursues within their particular guidelines. They use it to tell their stories, explain their faith, or strike awe in all those who enter. As a visiting outsider, its often easier to appreciate the efforts involved when detached from the related dogma. Plus, its probably better not knowing what the

congregants paid for it all! Some noteworthy examples within the U.S. Include:

- The National Cathedral in Washington, D.C., a nonspecific house of worship, where people of all faiths are welcome. Many national events take place within, including many presidential funerals.
- San Miguel Mission in San Miguel, California. Dating to 1797, this mission still contains its original interior paint, as well as many original murals, relecis, statues and paintings.
- St. Patrick's Cathedral in New York City. This stunning, mid-1800s, Neo-Gothic building is possibly the most famous church in America.
- Byodo-In Temple, O'ahu, Hawaii. Escape the urban sprawl of Honolulu to visit this peaceful, nondemoninational, temple in the mountains outside the city.
- Chapel of the Holy Cross, Sedona, Arizona. An architectural masterpiece and wholly unique in both its structure and setting. A perfect compliment to a flight into Sedona's equally iconic airport.

Whatever architectural style or theme piques your interest, it is likely well represented across North America. If you're in an area populace enough to merit an airport that can support King Air operations, you're likely near something architecturally interesting. Sometimes that might exist on the airport itself (early era hangars or terminal buildings). Other times, such structures are across the street or just a quick drive away via airport countesy car. Go ahead, check off a box! KA

Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI, & IGI and Platinum CSIP. In 30 years of flying, he has logged over 18,000 hours total, over 5,500 hours of instruction-given, and over 2,500 hours in various King Airs and the BE-1900D. As owner of Progressive Aviation Services, LLC (www.progaviation.com), he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he is also an Airbus A-320 series captain for an international airline, holds 8 turbine aircraft type ratings, and has flown nearly 90 aircraft types. Matt is one of less than 15 instructors in the world to have earned the Master CFI designation for 9 consecutive two-year terms. He can be reached at: matt@progaviation.com or (414) 339-4990.

Winter Readiness

by Dean Benedict

I was asked to write an article about preparing a King Air for winter weather. Initially, I brushed the idea aside because everything I would suggest is covered by the Phase Inspections in the Maintenance Manual. But when I had my shop, the majority of my customers flew less than 200 hours a year and subscribed to the alternate phase program. They came the same time every year, like clockwork, for two phases and other scheduled items. So maybe a cold weather check of your King Air is a good idea, especially if your phase inspections always come due in warm weather.

Checking Deice Boots

Speaking for myself, I would choose a day when the aircraft is not scheduled to fly so as not to delay takeoff with a lot of extra run-up items. The OAT must be below 75° F. I'd start with a really good walkaround and then take a very close look at the deice boots, paying particular attention to the leading edge where splits and cracks are most likely to occur. Don't forget the horizontal stabilizer. For a model 90 you only need a 6-foot ladder, but for T-tails, if you don't have a safe way to get up there, you'll have to leave it to your shop. You can at least check the wings. Make note of any cracks or splits observed in the boots, as you'll need to have those addressed by maintenance.

After the visual inspection, run the aircraft at high idle and select auto cycle on the deice switch while keeping an eye on the vacuum and pneumatic gauges. You want to see those gauges drop and then come back up. The deice switch (auto cycle) opens the pneumatic deice valve allowing air into the boot, causing the gauges to drop. Once the boot is inflated and the air is trapped, the pressure goes back up and so do the gauges. I would look for 16-18 psi after the drop. If that doesn't happen, I'd be worried about leaks in the boots. Take a closer look for cracks or weather checking and alert your shop accordingly.

Obviously if a boot doesn't inflate properly it can't bust the ice off the leading edge. In the case of most cracks, your shop can patch them with no problem. The sooner you catch a crack in a boot, the easier it is to patch. A properly installed patch should last a long time but if it starts to come loose, it usually can be redone. Multiple patches on a boot are not uncommon. However, eventually a boot will need to be replaced. They are not cheap and it is a labor-intensive job, so paying attention to your boots on a regular basis is good preventative maintenance.

A warning about boot dressing: I would never use anything but the manufacturer's recommended product to dress the boots on any aircraft. Everyone wants their King Air to gleam in the sun with black shiny boots, but too often they go off the rails to achieve the look. I have seen people use car wax and even floor wax on their deice boots! Such products will dry out boots faster than no product at all. Likewise, tire dressing products are not designed for aircraft pneumatic boots. Make sure whoever cleans your King Air understands which product is to be used on the boots. I cannot emphasize this point strongly enough.

External Heat Items

Windshield Heat: To test windshield heat, start with the battery on and select windshield heat. The different King Air models have a variety of windshield heat switches but the point is to cycle the switch through its various positions with a hesitation between each selection. While doing this, look at your magnetic compass – you want to see it swing a couple of degrees at each change of switch position. The compass won't swing if the OAT is too hot; again, it needs to be 75° F or below for this to work properly. If it cool outside and the compass doesn't swing, then your windshield heat is not coming on. Have your shop look into this. [For more information on windshields and windshield heat see the article "Windshields 101" in the Mar/Apr 2010 issue of *King Air* magazine or send me an email.]

Fuel Vent Heat: These are the tubes on the bottom of the wings just outboard of the nacelles. They have a tendency to erode on the leading edge and sometimes the fine wires come unglued causing failure to heat. With the battery on, feel the tubes for heat but don't burn your fingers. If it doesn't get hot, add it to your squawk list.

Pitot Heat: As long as you are checking your fuel vents, doesn't it make sense to check your pitot tubes as well? Just remember to take the pitot covers off before flipping that switch or you will have a big melted mess on your hands! Believe me, I've done it myself. I'm not trying to

insult anyone's intelligence. There is nothing worse than having a routine and relatively minor check turn into a major fiasco in a matter of seconds. I formed the habit of taking the pitot covers off and putting my cellphone and car keys on top of them. This ensures that I put them back on when I'm done and I don't get distracted by my phone while focusing on the aircraft.

Stall Warning Heat: On King Air 200s, 300s and 350s, the stall warning vane only gets half heat on the ground because the squat switch cuts the heat in half to compensate for lack of airflow. On those models if the tab gets warm you are good to go. Stall warning heat on model 90s is different. Its stall warning heat systems vary almost from aircraft to aircraft. It requires maintenance manual research by aircraft serial number to ascertain what configuration your 90 has. I could write a small book on just that subject. Suffice it to say that some 90s heat the vane all the time and others cycle the heat on and off. Allow ample time for heating in case yours is on a cycle, but don't just go up and grab it. You could burn your fingerprints off! Especially if your stall warning heats continuously. If a couple of minutes have gone by and you haven't blistered your fingers, add stall warning heat to your squawk list. And while you are at it, make a note for your shop to research what kind of stall warning system is in your 90.

Prop Heat: Although the prop heat boots are an external heat item, you are better off checking this in the air. The manual check done on the ground takes two people – one to turn the prop and feel the prop boots while the other is in the cockpit operating the system and monitoring the gauges. Although recommended by the maintenance manual, I've seen this test fall short on many occasions. I've written several articles on King Air prop heat and the problems with this test specifically. Two of those articles appeared earlier this year, in the February and April issues. Testing your prop heat in flight requires a clear understanding of the type of system installed in your King Air and keeping a keen eye on your prop amp gauge.

FCU heat: This is the least crucial of the external heat items. It's a tube located inside the engine cowlings by the fuel control. In 200s and 300s, the FCU heat comes on when the condition levers are moved forward. In the 90 models, there is an FCU heat switch in the cockpit for each engine. If the FCU heating element isn't working, there is still plenty of heat inside the cowling, even in freezing conditions, for that engine to operate normally. The only time a malfunction of FCU heat becomes an issue is in reverse or in an over-torque situation. FCU heat is checked at Phase Inspections.

Battery Off: As a friendly reminder, after checking all these items, don't forget to turn your battery off. It's easy to overlook when you are poking around your aircraft and not following a pre-flight or post-flight checklist. After years of waking at midnight and wondering if I left a battery switch on, I developed a habit to fix the problem. When working on a King Air with a dual bus system, I leave the beacon switch in the on position. The flashing beacon is a constant reminder that the battery is on. Try it yourself. As you get ready to leave the hangar and you look back at the aircraft on your way out the door, if that beacon is still going, you will happily turn your battery off and be thrilled you didn't drain it dead. When I'm working on a King Air with a triple feed bus, I use the nav lights as my "battery reminder" since the beacon bus is not powered with the battery on.

Speaking of checklists, my late father-in-law was an absolute stickler for them. He wouldn't get within 50 feet of his aircraft without a checklist in hand. Were he alive to read this article, he would have made his own checklist with all of the above items on it; he would have gone to the airport on a brisk morning to make sure his aircraft was winter ready; and he would have carried his handmade checklist throughout each activity. Safety was paramount with him and 'checklist' was his middle name. Before his passing he was honored by the AOPA as a 62-year member. Allow me to raise a glass to all owners and pilots, wishing you a multitude of safe hours flying your King Airs. KA

Dean Benedict is a certified A&P, AI with nearly 45 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). Now, with 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.

ADS-B Final Prep, NOTAM Improvement Bill Status and Response to UK Restricting Airport Access to BizAv

by Kim Blonigen

FAA Finalizing Items for ADS-B Implementation

Operational Rollout of ADS-B Baseline Services Complete

The Federal Aviation Administration (FAA) announced earlier that it has completed the implementation of the ADS-B Baseline Services on schedule and ready for the Jan. 1, 2020 ADS-B aircraft equipage deadline.

ADS-B is now operational at 155 airports, terminal radar approach control facilities and en route facilities and the FAA relayed that it is the preferred source for surveillance at those facilities which it says provides improved situational awareness for pilots and controllers and more accurate tracking of airplanes.

FAA Initiates Privacy ICAO Address Program

In response to concerns of the National Business Aviation Association (NBAA) and members of the general aviation community citing lack of privacy as a barrier to ADS-B Out equipment, the FAA has introduced the Privacy ICAO Address (PIA) Program "with the objective of improving the privacy of aircraft operators in today's ADS-B environment by limiting the extent to which the aircraft can be quickly and easily identified by non-U.S. government entities, while ensuring there is no adverse effect on ATC services."

Eligible aircraft for the PIA Program need to be U.S. registered, 1090 MHz ADS-B equipped, using a third-party call sign and flying in the domestic U.S. airspace. The administration specifies that owners of eligible aircraft can "request an alternate, temporary ICAO Aircraft Address, which will not be assigned to the owner in the Civil Aviation Registry (CAR)."

According to the announcement, the program will have two phases:

Phase 1: The application for PIA can be accessed from *https://www.faa.gov/nextgen/equipadsb/privacy* "**starting on or slightly before Jan. 1, 2020.**" This service will be operated, monitored and maintained by the FAA.

Phase 2: The service will be transitioned to third-party service provider(s) who will operate, monitor and maintain this program, which will continue to be available from the website page noted.

NBAA President and CEO Ed Bolen commented on the program by saying, "We're pleased the FAA has responded positively to ADS-B privacy concerns of operators, which NBAA has raised in numerous government/industry forums, including with the NextGen Advisory Committee. Until now, the lack of a privacy solution has been a disincentive for some operators to equip with ADS-B. No one should have to surrender their privacy and security just because they board an airplane."

For more information, go to: *https://www.faa.gov/nextgen/equipadsb/privacy*

NOTAM Improvement Bill Approved by House

In early November, the Notice to Airmen Improvement Act of 2019 (H.R. 1775) passed a voice vote in the House and is headed to the Senate Commerce Committee for consideration.

H.R. 1775 calls on the FAA to establish a task force that is comprised of a cross section of industry, safety and human factors experts to review existing means to present NOTAMS and flight operations information to pilots; review regulations and policies surrounding NOTAMS; determine best practices to organize, prioritize and present flight operation information in an optimal manner, and provide recommendations to improve NOTAM information.

Rep. Pete Stauber (R-Minn.) introduced the legislation and said, "Although NOTAMS contain critical safety information, they are often lengthy and difficult to understand. These inefficiencies have the potential to create life-threatening situations. My legislation will ensure the continued safety of air travel by requiring that safety protocols are consistently maintained and improved upon."

The report that accompanied the bill pointed to the National Transportation Safety Board's recommendation to the FAA in 2018 to establish a group of human factors experts to review information presented to pilots.

NBAA and IBAC Respond to Calls for Restricting UK Airport Access to BizAv

The NBAA and the International Business Aviation Council (IBAC) responded to calls from some British political leaders for restricting business aircraft access to airports in the United Kingdom (UK) on emissions grounds.

The two associations emphasized that such proposals disproportionately target a single transportation mode with a proven record on carbon reduction and an aggressive push underway for the availability and use of Sustainable Aviation Fuels (SAF). These non-fossil fuel power sources can reduce aviation's carbon lifecycle emissions by up to 80%. The fuels are fully certified, safe and ready to use in all turbine engines today.

Despite the industry's focus on sustainability, representatives of the Labour Party in Britain's Parliament recently cast their support for such a plan, calling an eventual ban on airport access for business aircraft powered by traditional fuels "a sensible proposal."

"Even though business aviation accounts for only a minuscule portion of transportation emissions, the industry is pressing ahead on SAF," said IBAC Director General Kurt Edwards. "Instead of singling out business aviation for prohibitive restrictions on airport access, UK leaders should focus on efforts to make SAF more widely available in the UK through positive incentive policies to encourage production and use of SAF in greater quantities."

"Business aviation has continually led the way in promoting products, procedures and policies to reduce aircraft emissions, with proven results," said NBAA President and CEO Ed Bolen. "We urge leaders in the UK and elsewhere to set aside punitive proposals like this one, and work with us to build upon the significant progress made to date."

Edwards and Bolen pointed to the decades-long industry investment in satellite-based avionics, winglets, airframe composites, advanced propulsion systems and other innovations that have made aircraft ever more fuel efficient, thereby continually reducing carbon emissions. Thanks to these and other advances, over the course of the past four decades, carbon emissions from business aviation have been reduced by 40%.

Ten years ago, business aviation leaders redoubled their commitment to emissions reduction, uniting behind a plan to reduce the industry's overall emissions 50% by the year 2050, relative to 2005 levels. A central pillar of this commitment has been the development of SAF.

"At a time when leadership is needed on sustainability, the proposed ban lacks meaningful value. It will have a de minimis impact on emissions overall while denying connectivity for London and hindering competitiveness for companies of all sizes in the region and beyond," Edwards said. "Let's focus on proposals that would have a real effect on emissions reduction while also promoting aviation connectivity and sustainability." KA

The E90 (and A100, B100) Fuel System

by Tom Clements

Reader Ron Randall recently sent me an email requesting that I review the E90's fuel system. Ron has experience operating a King Air 100, a 200 and two E90s. He wrote that he experienced problems with the E90's fuel system and requested my review/input. I am happy to oblige.

Step back in time with me to early 1972. The A100 model had just replaced the 100 ("Straight" 100) as the "big" King Air and the PT6A-20-powered C90 was the concurrently produced "small" King Air. The 200-series, 300-series, F90-series, and PT6A-21 powered and -135A powered C90 versions were all yet to come.

One negative associated with the straight 100 was its fuel capacity … 374 usable gallons. That was 10 gallons *less* than the C90 yet its PT6A-28 engines consumed fuel faster than the PT6A-20 engines of the C90! With this in mind, the engineers designed a new fuel system for the A100 that brought its capacity up to 470 gallons, 96 more than its predecessor. Nice! Equally important – at least in my opinion – was that the A100 featured a highly improved fuel system. In fact, with minor modifications and variations, it is the fuel system that exists today in the 200- and 300-series.

A C90 was taken from the assembly line in early 1972, provided with the same engines and props that had been used on the straight 100, and fitted with a fuel system very similar to that of the A100. It went through a thorough flight-testing program and was certified as the E90. What a nice airplane it has proven to be! It had a 10-year production run – 1972 through 1981. Quite a few of us old-time King Air users wish that the small King Air produced today, in late 2019, were an advanced version of the E90 instead of the advanced C90 version that is available. An E90GTx … what a cool machine that would be! (Not that the C90GTx isn't excellent, also. I'll just have to keep dreaming of an updated E90.)

Let's return to the fuel system. The additional fuel was gained by adding two additional tanks both of which reside in the wing outboard of where the C90's fuel tanks ended. One of these tanks – the one that sits in the wing's leading edge, forward of the main spar – is a bladder tank, similar to all the other tanks. The other new tank is created by sealing the wing skin between the forward and rear spars in the outboard portion of the wing … an integral, sealed tank.

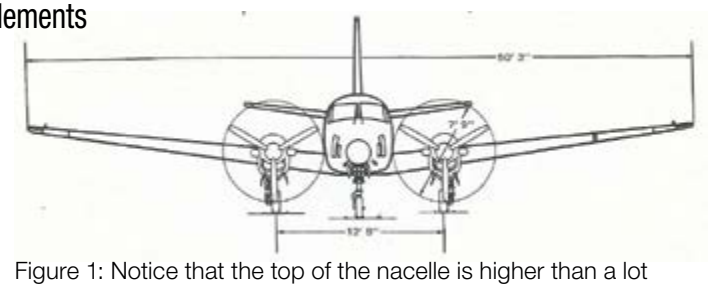

Figure 1: Notice that the top of the nacelle is higher than a lot of the wing but is lower than the wing tip.

Before these two new tanks were added, the highest location in the entire fuel system was at the top of the nacelle fuel tank. A filler cap was located there to allow the nacelle tank to be topped with fuel. In the E90 system, however, the additional two tanks – because of the wingspan and dihedral – move the highest location to the wing tip (see Figure 1). The nacelle tank could now be topped merely by topping the cap at the tip and allowing gravity flow to fill all of the other lower tanks, including the nacelle tank.

Recognizing this fact, the designers of the A100 system (remember, that's the forerunner of the E90 system) eliminated the filler cap atop the nacelle. It was redundant and unneeded. The nacelle structure of the 100-series is slightly different from that of the 90-series since the wheel well must accommodate dual main wheels and tires instead of the single-wheel design of the 90. For the E90, however, the nacelle fuel cap was retained to save the extra manufacturing cost entailed in having separate C90 and E90 nacelle structures. Woe to be the pilot or fueler who fails to read the warning placard and removes the nacelle filler cap when the main tank is full … the nacelle gets a Jet-A wash and the ramp gets wet! Some E90 operators have installed a twisted piece of safety wire running from screw-to-screw across the nacelle cap. That's a clever, simple and useful idea.

The C90 fuel system avoids the use of "Main" and "Aux" nomenclatures. Instead, the terms are "Nacelle" and "Wing." On the other hand, the E90 – and all of the other King Air models that have the wing's filler cap near the tip – use "Main" and "Aux."

When the filler cap midway out on the wing is topped on the C90, fuel gravity-flows downhill into all tanks – the three outboard of the nacelle, the nacelle tank itself and the one inboard of the nacelle. The only problem with doing this – as has been implied earlier – is that the nacelle tank does not quite get filled, since its top

is higher than the wing's filler cap. So why do we even *have* a filler cap on the wing? Why not just fill the highest spot atop the nacelle?

Here's the answer: All fuel the engine consumes comes from the nacelle tank only. All other fuel is useless until it gets transferred into the nacelle, so once it gets there the designers don't want it to be able to easily escape. Thus, a flapper-type of check valve permits fuel to flow *to* the nacelle but prevents it from easily flowing *from* the nacelle back into the wing. It would take hours and hours and hours to patiently fill the wing tanks from the nacelle cap.

When the word "Main" is applied to the E90-style fuel tank system, it includes all fuel in the wing tanks outboard of the nacelle as well as the nacelle tank itself. Why is the bladder tank in the wing's center section – between the nacelle and the fuselage – not included? Because it includes a portion that is too low to gravity-flow into the nacelle. Liquid doesn't want to flow uphill, right? Hence there must be a system designed to push or pull this fuel uphill to make it all usable to the engine by getting it into the nacelle tank. Hence, the bladder in the wing center section is the "Aux" tank, it has its own filler on top, and the fuel it contains is useless until it gets transferred into the nacelle portion of the Main complex of tanks. For the E90, the Main holds 196 gallons per side of usable fuel and the Aux holds 41 gallons … a total for both sides is 474 usable gallons, 90 more than the C90's 384.

In the C90, transferring fuel from the wing tanks to the nacelle tank can be done by two methods. First, gravity-flow works well but the last 28 gallons (about 200 pounds) cannot be transferred by gravity flow … it would need to flow uphill. Second, a submerged electric pump – located in the wing's center section tank, the lowest spot of the wing tanks – cycles on and off as required to keep the nacelle within about 10 gallons of full. So long as the transfer pump is working properly – as it usually is – then no gravity-flow is necessary and none takes place. Although the electric transfer pumps in the C90 have proven to be quite reliable, when and if they fail then the airplane loses 28 gallons of usable fuel on that side.

The transfer system was simplified and made more reliable on the A100 and similar, later designs. A jet transfer pump is now used. The line taking fuel from the boost pump toward the engine-driven, high-pressure fuel pump has a tap-off that sends some of the boost pump's discharge to the jet pump. What a simple device! It is merely a venturi with no moving parts. Bernoulli's principal comes into action causing the fuel pressure to be reduced as the fuel's speed accelerates due to its need to squeeze through the venturi's throat. This fuel from the boost pump is what causes or *motivates* the venturi to create suction that can pull the fuel from the aux tank. That explains why the fuel from the boost pump that flows to the jet pump is called "motive flow" since the venturi is not motivated to create suction until flow passes through it. A normally-closed (N.C.) solenoid valve – the Motive Flow Valve – is the only moving part of this transfer system. Whenever fuel is available downstream of the boost pump, the simple action of energizing the Motive Flow Valve to its open position – by moving the Aux Transfer switch from Off to On – begins the fuel transfer action. Simple. Reliable. Nearly fool proof.

In my opinion, there is an even bigger improvement in this newer fuel system than the simplicity and reliability of the transfer system … it is the fact that an engine-driven mechanical boost pump was added to both left and right engines. The drive pad on the aft accessory case of the PT6 to which the boost pump may be installed has always existed. Yet, strangely, not until the A100 – and then the E90 and others – was it ever utilized! What a waste! (Are you reading this, you great King Air modifiers? I still think there would

be a market for an STC that would allow an engine-driven boost pump to be installed on A90s, B90s and the C90-series.) Unlike the earlier fuel system, no longer is it SOP (Standard Operating Practice) to operate with the electric boost pump on at all times for the purpose of cavitation avoidance. Instead, the electric pump becomes a Standby Boost Pump, rarely needed at all. How nice!

When I spoke briefly to Mr. Randall on the telephone, he confirmed what I had suspected was his complaint about his E90's fuel system: Sometimes it vented copious amounts of fuel onto the ramp out of the heated fuel vent under the wing outboard of the nacelle. This only happened following short flight with all tanks topped before departure.

I am certain that many of you have read previous articles I have written about this problem, especially as it applies to the F90-, 200-, and 300-series, the ones in which fuel transfer is automated. For these models, I suggest that SOP be to operate with the left and right Aux Transfer circuit breakers pulled, only pushing them in if the aux tanks contain fuel and only when the mains tanks are at least 200 pounds less than full. For the E90, A100, and B100 the solution to the venting problem is very similar: Simply do not turn on the Aux Transfer switches, left and right, until the main tanks are down a bit … like at Top of Climb, after reaching cruise speed.

You see, the transfer system sends fuel *into* the Main tank faster than the engine is burning fuel *from* the Main tank. The net increase in Main tank fuel quantity causes a pressure buildup in the Main tank. In theory, the pressure should be prevented from reaching an excessive level by sending some of the fuel through a pressure relief valve and into the vent line from the Main tank back into the Aux tank. Almost always, however, some of that fuel, instead of returning to the Aux, vents overboard. How much? Not much. No one knows with certainty but my educated guess is that less than a gallon or so per side would be vented during the time it takes for the Auxes to empty. Unless someone were flying in close formation with you, the minor amount of fuel streaming out of the heated vents will likely go unnoticed. But in the rather rare case in which you land before the Aux tanks are empty? Now that dripping fuel will be very obvious, perhaps causing the hazmat folks to pay you a nasty visit.

A common response is to open the filler cap at the wing tip to relieve the tank's pressure. Yes, that is effective … but comes with the nasty downside of gushing fuel out of the filler onto the wing, onto yourself or the lineperson, and onto the ramp! A better way? Leave the transfer switches off while running the engine for 5 to 10 minutes. That will take fuel from the main tank without it being replenished, thus eliminating the

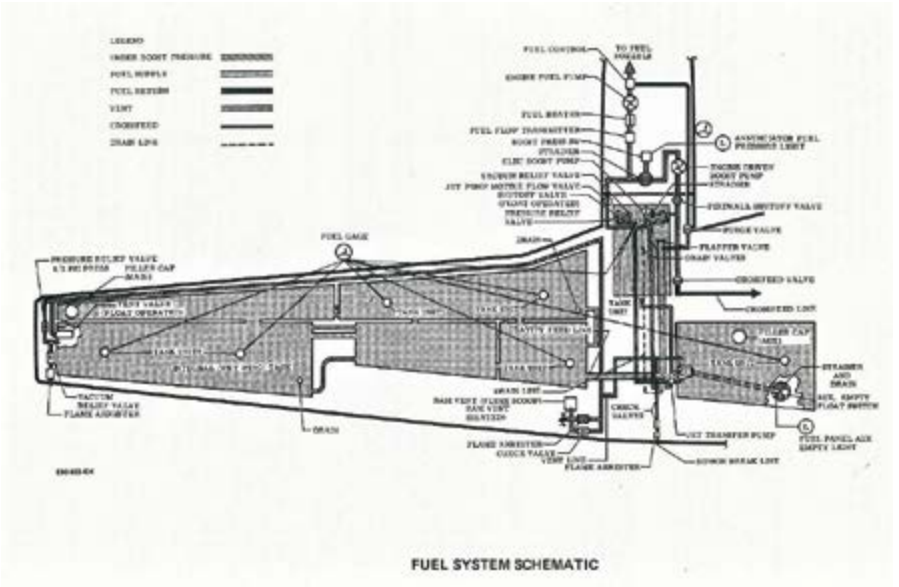

Figure 2: The E90 Fuel Schematic from the POM. The Main tank includes the nacelle tank and all five tanks in the outboard wing. The Aux tank is the single inboard tank.

over-pressurized condition and stopping the venting.

However, the very best idea is to avoid pressurizing the Main tank in the first place! Simply don't transfer until there is some space available in the Main tank. Leave the left and right Aux Transfer switches off until the Main quantity is 1,100 pounds or less. (Full is about 1,300 pounds per side.)

You are correct that the factory procedure is to fill the Aux tanks last and to use them first. This is to avoid excessive wing bending stress under the worst possible combination of wing loading and fuel/payload distribution. Friends, if you ever experience spine-crushing positive G-forces while at the same time with every cabin seat full, lots of heavy baggage, full Aux tanks and almost empty Mains, I'd fret a bit. But waiting to transfer until the Mains are down about 15%? I suggest losing no sleep over that one!

Another problem that sometimes crops up with the E90-style fuel system is the migration of fuel from the Main tank into the Aux tank. Suppose that you had the line person "fill the tips" but ignore the inboards … a very common fuel order when your payload does not allow for full fuel. The next morning when you show up and start checking the plane you find that one side – say, the left – is showing 1,300 pounds in its Main and 0 pounds in its Aux … just as you anticipated. However, the right side is showing 1,100 in the Main and 200 in the Aux. How did that happen?!

There is a vent line connecting the top of the nacelle tank to the center-section (the Aux) tank (Figure 2 shows the line). This line has three parallel paths that connect it to the nacelle: (1) A float-operated valve that should open only when the nacelle's fuel level starts dropping; (2) A vacuum relief valve that will be sucked open to allow air to enter the tank in the event that the float-operated valve sticks in the closed position; and (3) A pressure relief valve to relieve the pressure buildup caused by thermal expansion or by fuel transfer. If any of these three connections is defective such that it allows fuel to leak past it at all times, then fuel in the nacelle portion of the Main tank will find its way downhill into the Aux. It's time for maintenance to remove the access cover on top of the nacelle and check the three valves underneath.

It is common that the fuel migration will cease – because the level in the Main complex of interconnected tanks has reached the level of the nacelle portion's top – before the Aux tank overflows and starts venting onto the ramp or hangar floor. On the other hand, if the Aux was already filled when this leakage began … expect the angry call from the FBO about the mess your airplane is causing!

There is one other path by which fuel can migrate from Main to Aux: Via the jet pump, through a defective check valve in the line going from the Aux tank to the jet pump. This situation is worse than the leaky valve(s) at the top of the nacelle because more fuel can migrate than the Aux tank can hold! Both the jet pump and the check valve are quite easily accessible in the main wheel well. (The previous sentence is not true for the 200- and 300-series since their jet pumps are located inside of their Aux tanks.) I am happy to report that the problem of fuel migration from Main into Aux is not a common occurrence.

In conclusion, the addition of the engine-driven boost pump, the simplified and more reliable fuel transfer system, the extra fuel capacity … the E90-style fuel system, in my mind, is a real winner that is highly improved over its C90-style predecessor. Its only downside is the tendency to over-pressurize the main tanks and vent a little fuel overboard when one begins Aux fuel transfer while the Mains are already full. Avoid that and you, too, will find this system nearly perfect!

King Air expert Tom Clements has been flying and instructing in King Airs for over 46 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 editor@blonigen.net.

Airmaster! (Part One)

by Edward H. Phillips

Dwane Wallace's design of the C-34 was based on the Cessna "A" series of 1928, but incorporated upgrades that improved comfort and performance. (Textron Aviation)

In 1933 Dwane L. Wallace and his brother Dwight resurrected the Cessna Aircraft Company, launched the new Model C-34 and restored their uncle Clyde V. Cessna as president of the company that bore his name.

Four years after the devastating stock market crash of 1929, the United States was slowly beginning to emerge from the depths of the worst economic debacle in the nation's history. Still, tens of millions of people remained unemployed, thousands of banks had shut their doors, soup kitchens were overwhelmed and obituaries of suicidal millionaires gone broke littered the newspapers.

In November 1932, President Herbert Hoover had been kicked out of the White House by the American people in a landslide election. They replaced him with the charismatic governor of New York, Franklin Delano Roosevelt. His campaign song was "Happy Days Are Here Again," and Roosevelt was intent on living up to that musical motto by getting the United States back on its financial feet.

Meanwhile, out west in Wichita, Kansas, the once-mighty "Air Capital of the World" had been reduced to little more than a shadow of its former self. Only the Stearman Aircraft Company had managed to barely survive the slaughter of Wall Street that began in October 1929, thanks largely to subcontract work from the Boeing Aircraft Company in Seattle, Washington. Curtiss-Wright had padlocked the Travel Air Company's factory in 1931, and in 1932 the board of directors booted Clyde Cessna out of the company that bore his name.

Amid all of that misfortune, a young man from Belmont, Kansas, decided to attend Wichita University and major in aeronautical engineering. He was a favorite nephew of none other than pioneer aviator Clyde Vernon Cessna himself, and his famous uncle was the first to give him a ride in an airplane and strongly encouraged the lad to pursue his dream of flying. After graduating in May 1933 with sheepskin in hand, Dwane L. Wallace set about trying to find a job as an aeronautical engineer. Mac Short, chief engineer at the Stearman Aircraft Company, had to turn him away, so he went to see Walter Beech but suffered the same results.

Wallace, however, was relentless. Finally, Beech's chief engineer Ted Wells put Dwane on the skinny payroll at a very meager salary as the third member of Beech Aircraft Company's engineering department. Dwane assisted Wells and Jack Wassal performing drafting and stress analysis before moving up to engineering projects for the Model B17L and the mighty, 710-horsepower A17F.

Although Wallace was thankful to have a job in aviation, he wanted to do more than work in his uncle Clyde's silent factory – he wanted to resurrect it, to bring it back to life again. During the summer and autumn 1933 he began plotting a three-point course of action: First, wrest power from the Cessna Aircraft Company board of directors and shareholders. Second, invite Clyde Cessna to be an active participant in the new venture. Third, design an airplane that would sell in a severely depressed marketplace.

For months he and his older brother Dwight, a highly respected attorney, held discussions with Mr. Cessna. The elder Wallace knew how to handle the legal aspects of what would amount to an attempted hostile takeover of the Cessna Aircraft Company.

Mr. Cessna made it clear, however, that he was only interested in helping his two nephews reopen the factory. After the death of his friend Roy Liggett in 1933 while flying the Cessna CR-2A racer, Clyde had lost interest in manufacturing and selling airplanes but he still believed in aviation. Dwane and Dwight worked hard

Clyde Vernon Cessna was truly one of America's early aviation pioneers who believed in the future of the airplane as a means of personal transportation.
(Textron Aviation)

during evenings and on weekends formulating plans and writing letters to stockholders. Clyde agreed to sign the letters. His endorsement was crucial to the Wallace brother's campaign to take back their uncle's airplane company from those content to let it die.

By the end of 1933 the Wallace brothers were ready to make their assault. They mailed the special letters and included a proxy so shareholders could vote for or against the company's future. A second series of letters was mailed later, and one is quoted here in full:

Dear Sir:

A short time ago I mailed you a letter enclosing a proxy, which no doubt gave you a good idea of what has been going on at the Cessna plant for the past three years under its present management. I feel that I should write you more in detail of what I intend to do after I'm back in control of our company.

There is no doubt but that the airplane industry could be a paying one today if handled properly. Good examples of which are represented by the Waco, Monocoupe, Douglas and Northrop airplane companies, as well as others. Through the fact that I have been engaged in the airplane business for the past two decades and having always been recognized as one of the pilgrims in the airplane industry, I have made many valuable contacts in the field of aviation in the last three years with various companies and large distributing agents for airplanes, and with these connections I am sure that I can sell a large number of airplanes.

I intend to redesign and develop the four-place Warner ship to such an extent that it will develop a speed of approximately 185 mph and yet keep its present stability, airworthiness and other grand features that made it so popular. This ship will have many wonderful selling points, such as the low cost of maintenance and operation, upkeep and high cruising speed.

I am sure you realize that our stock is practically worthless today. A complete liquidation would pay only a very small percent back on our original investments, while if you cooperate with me, the Cessna Aircraft Company will again be doing a good business and our stock on the market rise accordingly.

I am enclosing another proxy in case you did not receive or have misplaced the other one, and I will appreciate your executing the same and returning it to me in the self-addressed envelope which is enclosed.

The letters were signed, "Very Truly Yours, Clyde V. Cessna."

The brothers Wallace knew it would take more than letters from their famous uncle to win the battle, and Dwane visited every investor in Wichita who held more than 100 shares of stock, echoing Clyde's call for cooperation by telling them their support now would lead to profits later. Next, Dwane and Dwight pooled their resources and bought 6,000 shares of Cessna Aircraft Company stock from the brokerage firm of C.M. Keys in New York City. Local investor Thad C. Carver, however, held more than 20,000 shares and Clyde held 12,000, with 67,000 shares outstanding.

On Jan. 17, 1934, at the annual stockholders meeting of the Cessna company, Dwane and Dwight narrowly won a majority and ousted the incumbent board of directors. New members of the

In 1933 Dwane L. Wallace spearheaded the rebirth of the Cessna Aircraft Company. Under his guidance the reborn company weathered the Great Depression and went on to become the world's largest manufacturer of light airplanes.
(Courtesy Dwane and Velma Wallace)

Dwane's older brother Dwight used his skills as an attorney to navigate the legal channels necessary to regain control from the incumbent board of directors. He eventually became a full-time employee of the company during World War II.
(Courtesy Dwane L. Wallace)

Rare photograph of the prototype C-34 soon after its completion in August 1934. The airplane was the first to be built in the Cessna factory since the EC-2 of 1931. (Robert J. Pickett Collection/Kansas Aviation Museum)

board and officers of the reborn company were elected, including Clyde Cessna, president, Roscoe Vaughan, vice president; Dwight Wallace, secretary/treasurer, and Dwane Wallace, general manager. The hardest battle had been fought and won. The Wallace boys had an airplane company, but what they needed was an airplane to sell. Fortunately, since his senior year in college Dwane had been thinking about a new cabin monoplane and what virtues it had to possess if it was to succeed in a very depressed marketplace.

On March 5, 1934, Clyde Cessna officially announced that the company's airplane would be known as the C-34 to celebrate the rebirth of Cessna Aircraft in 1934. To help Dwane with the engineering tasks required to transform the C-34 from the drawing board to first flight, he hired two young and talented men – Jerry Gerteis and Tom Salter. Detail design work progressed smoothly and fabrication of parts and assemblies was underway by the end of March. By late spring the fuselage and cabin design were close to completion and the full-cantilever wing layout was approaching its final configuration.

To build the prototype for C-34 Dwane surrounded himself with a small band of skilled workers who were more than capable of translating a blueprint airplane into a living machine of steel, wood and fabric. A majority of the monoplane had to be made by hand because there was only a small number of new fixtures and jigs available to ease the job. The C-34's cabin featured two front seats and bench-type rear seat that would provide ample comfort for the pilot and three passengers. The interior walls were soundproofed as much as possible, and fresh air vents would keep the cabin cool in hot weather and a heat muff on the engine's exhaust manifold would keep everyone warm in winter. A small baggage compartment was located behind the rear seat and could accommodate up to 64 pounds of luggage or small packages.

As for the C-34's airframe, Dwane used the popular Cessna Model AW of 1929 as a baseline for design of the new monoplane. There were, however, some minor changes:

- The M-12 airfoil used on the Model AW was replaced with a NACA (National Advisory Committee on Aeronautics) 2412 airfoil section that improved lift.
- The spruce spar was made of built-up laminations that formed a continuous unit, with truss-type ribs fabricated from spruce and plywood gussets for reinforcement.
- Double bracing wires were employed inside the wing structure to provide required torsional rigidity, and the leading edge was covered in plywood.
- The completed wing did not require plywood sheathing over its entire length, therefore more doped cotton fabric was used that saved time, money and weight.
- A full-cantilever main landing gear eliminated the welded steel tubing and elastic bungee cords used on the Model AW. Each gear assembly housed an oil-spring shock strut and 21-inch diameter wheels.
- Cable-operated mechanical brakes were standard equipment along with an eight-inch, full-swiveling, non-steerable tailwheel.

By June 1935 the prototype had been thoroughly tested and certified by the Civil Aeronautics Authority. A C-34 with standard equipment was priced at $4,985. (Robert J. Pickett Collection/Kansas Aviation Museum)

- A Warner "Super Scarab" static, air-cooled radial engine rated at 145 horsepower replaced the Model AW's 110-horsepower Warner powerplant.

The prototype airplane was completed August 9 and licensed by the Civil Aeronautics Authority (CAA) as NX12599, constructor No. 234. The next day the handsome ship was rolled out of the factory and prepared for its first flight. Dwane Wallace carefully inspected the new Cessna before local pilot George Harte climbed aboard and fired up the seven-cylinder Super Scarab engine.

The takeoff was uneventful and after putting the C-34 through its paces on a short test flight, Harte landed and reported to Wallace that the airplane handled well and had good performance, considering that it had only 145 horsepower. A series of flights during the next few days revealed a maximum speed of 162 mph and a cruise speed of 145 mph. It looked as though Dwane had designed a worthy successor to his uncle's Model AW.

A few weeks later after a slate of engineering flight tests were completed by Harte and Wallace, the CAA's Jim Peyton flew the ship and worked closely with Wallace and Harte as the C-34's flight characteristics were probed, including recovery from intentional spins in both left and right directions. Those tests went well, and in the autumn of 1934 only one obstacle remained: submitting stress analysis and engineering drawings to the CAA for approval and, hopefully, issuance of the coveted Approved Type Certificate (ATC).

Armed with a suitcase full of documentation, Wallace hopped on an eastbound bus to Washington, D.C. Dwane took a room in the Ambassador Hotel for two dollars a day and went to the CAA's office where he met engineer Al Vollmecke. For five weeks Vollmecke perused every document and drawing with Wallace by his side. Inevitably, some changes had to be made to stress analysis calculations, and Dwane made many trips down the street to a blueprint shop where the alterations were made.

Finally, Vollmecke gave the Cessna C-34 his and the CAA's stamp of approval. The Cessna Aircraft Company was issued ATC 573 June 8, 1935, and the prototype airplane was sold to the Sundorph Aeronautical Corporation later that year.

During 1935, the Cessna factory slowly began receiving orders for the C-34, but money was tight. To supplement revenue and keep the tiny payroll intact, Wallace obtained a repair station certificate from the CAA and his workforce made repairs and alterations to a wide variety of airplanes. By late 1935, three airplanes per month were rolling off the assembly line and consumer interest in the handsome monoplane was increasing.

Thanks to the Wallace brothers, their uncle Clyde's airplane factory was back in business and the future looked bright. His nephews had inflicted a righteous revenge on the old board of directors, and now the sky was the limit. 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.

SRS Aviation Introduces Onboard Coffee Maker

SRS Aviation recently announced that it has received FAA TSO certification for its onboard coffee maker Jet Java, for all fixed wing aircraft.

The coffee maker includes four different trays using K-cups®, coffee and tea, as well as one that provides hot water, with a 2½ minute brew time. Jet Java is a top-fill device with 14-ounce capacity and doesn't require a potable water connection.

Operating on either 4 amp 110VAC or 12 amp 28VDC, the coffee maker is rail system mounted and approved for installation in the aircraft cabin or galley. SRS Aviation says it is the quickest, lowest cost installation in the industry.

For more information, go to *www.SRSAVIATION.com* or call (877) 364-8003.

NBAA Regional Forums for 2020

The dates and locations for the National Business Aviation Association (NBAA) Regional Forums are as follows:

- Wednesday, Jan. 29 – West Palm Beach, FL (PBI)
- Thursday, March 5 – San Jose, CA (SJC)
- Wednesday, June 10 – White Plains, NY (HPN)

"At NBAA's regional forums, you can experience the excitement and energy of the business aviation industry in a single day, right in your part of the country," said Dina Green, NBAA vice president of events. "We transform a local airport into a showcase for all the latest technology and trends shaping airborne mobility."

The regional forums bring current and prospective business aircraft owners, operators, manufacturers, customers and other industry personnel together.

On average, NBAA forums feature 150 indoor exhibitors, dozens of aircraft on display and attract about 2,000 attendees. Education sessions look at the latest issues affecting the industry – such as market updates to tax and regulatory changes and safety programming – as well as focus on workforce development, including programming for students considering a career in business aviation.

To learn more about the regional forums, go to: *www.nbaa.org/event-type/regional-forum/* KA

King Air Technically...

From Service Letter MTL-25-01: Equipment/ Furnishings – MedAire Aircraft First Aid Kits with Medication Subject to Recall Notice

Date: Nov. 5, 2019

Effectivity: Super King Air B200GT, Serial Numbers BY-278 thru BY-358; Super King Air B300C, Serial Numbers FM-69 thru FM-80; Super King Air B300, Serial Numbers FL-996, FL-1007, FL-1030, FL-1037, FL-1083 thru FL-1196; King Air C90GT, Serial Numbers LJ-2135 thru LJ-2167

Reason: To provide information about MedAire first aid kits that have medication that has been recalled.

Description: This service letter transmits a MedAire Recall Notice that provides information about medications in some medical kits that has been recalled.

Refer to the actual Service Letter MTL-25-01, which has the Recall Notice attached.

Compliance – Informational: This service document is for informational purposes only.

Refer to the MedAire website for additional information on drug recalls and shortages at: *https://www.medaire.com/about/recalls-and-shortages*

From Service Letter MTL-57-02 Owner Advisory: Wings – Lower Forward Inboard Attach Fitting Inspection

Date: Nov. 5, 2019

Effectivity: Super King Air 200T/B200T, Serial Numbers BT-1 thru BT-30; Super King Air 200C/B200C, Serial Numbers BL-1 thru BL-72; Super King Air 200CT/B200CT, Serial Numbers BN-1 thru BN-4;

Super King Air 200/B200, Serial Numbers BB-2 thru BB-1157, BB-1159 thru BB-1166, BB-1168 thru BB-1192, Model A200 (C-12A/C-12C), Serial Numbers BC-1 thru BC-75, BD-1 thru BD-30; Model A200C (UC-12B), Serial Numbers BJ-1 thru BJ-66; Model A200CT (C-12D, FWC-12D, C-12F), Serial Numbers BP-1, BP-7 thru BP-11, BP-19, BP-22, BP-24 thru BP-45; Model A200CT (RC-12D, RC-12H), Serial Numbers GR-1 thru GR-13; Model A200CT (RC-12G), Serial Numbers FC-1 thru FC-3; B200C (UC-12F), Serial Numbers BU-1 thru BU-10

Reason: This service document is being issued to perform a one-time inspection for an incorrectly repaired radius on the wing lower forward inboard attach fitting which could lead to premature cracking of the fitting.

Compliance – Mandatory: Airplanes with more than 10,000 flight hours shall accomplish this service document within 12 months from receipt. Airplanes with less than 10,000 flight hours shall accomplish this service document at the next 5-year check of wing bolts in accordance with King Air Structural Inspection and Repair Manual, Chapter 57-17-01, Table 201, Index No. 4

From Service Letter MTL-73-01: Engine Fuel and Control – Examine the Left Firewall Fuel Filter and Associated Fuel Lines for Possible Sealant Contamination

Date: Nov. 5, 2019

Effectivity: King Air 90 (applicable variants within defined LJ serial range), Serial Numbers LJ-2152 thru LJ-2155; Super King Air B300, Serial Numbers FL-1130, FL-1153 thru FL-1156, FL-1158 thru FL-1160; Super King Air B200GTS, Serial Numbers BY-329 thru BY-338, BY-340; Super King Air B300C, Serial Number FM-77

Reason: This service letter has been issued to inform the operator of the possibility of sealant contamination of the left firewall fuel filter and associated fuel lines.

Compliance – Informational: This service document is for informational purposes only.

NOTE: As a convenience, service documents are now available online to all customers through a simple, free-of-charge registration process. If you would like to sign up, please visit the Customer Access link at *www.txtavsupport.com* to register.

The information provided in this column may be abbreviated for space purposes. For the entire communication, go to www.txtavsupport.com.

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