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Founder Leon Russell is memorialized across from the historic The Church Studio.

Cain's Ballroom is a live music venue first, but with a building turning 100 in 2024 and a long list of legendary performers, it also is a museum in downtown Tulsa.



# The Hum of the Heartland

by MeLinda Schnyder

Photos by author unless otherwise stated



Danny Boy O'Connor, executive director of The Outsiders House Museum, hasn't officially started flying lessons but plans to. He dreams of owning a small aircraft that will fit his 6-foot-6-inch frame and allow him to find and document more film, music and pop culture locations through the Delta Bravo Urban Exploration Team (find it on Facebook). In the meantime, he's been flying often with friend and fellow Oklahoman Casey Karney, the owner of this 1982 Beechcraft Bonanza.

In the five years since its doors have been open to the public, The Outsiders House Museum has brought fans of “The Outsiders” from across the globe to Tulsa, Oklahoma, to explore where the 1967 book was written and where the 1983 movie was filmed.

Grammy-nominated recording artist Danny Boy O'Connor relocated from Los Angeles to Tulsa after he saved the one-story bungalow northeast of downtown Tulsa from destruction in 2016, then he spent the past five years restoring the house to how it appeared when director Francis Ford Coppola turned the Crutchfield neighborhood into a movie set for filming in 1982.

Acknowledging Tulsa has a rich history, O'Connor said he's

thrilled to have had a front seat to the rebirth of the city's art and culture scene.

“Tulsa is going through a renaissance period, it's finding its second wind,” he said. “On the heels of the Guthrie Green and the Woody Guthrie Center opening, in the last five years I've seen the Gathering Place completed, Buck Atoms open on Route 66, a lot of revival along Route 66 and then last year the Bob Dylan Center and The Church Studios.”

In short: Tulsa has become an international destination for tourists. Leading the way in terms of name recognition is the center dedicated to creativity explored through the career of Bob Dylan, widely considered one of the greatest songwriters of all time.

Dylan wasn't born in Oklahoma so why is a center devoted to studying the Nobel Prize laureate for literature in Tulsa? Because the legendary singer-songwriter, now 81, chose Tulsa from among the suitors of roughly 100,000 items Dylan created or has collected throughout his seven-decade career. When a Vanity Fair writer asked why he chose the city for his archives, Dylan explained: “There's more vibrations on the coasts, for sure. But I'm from





“The Outsiders” was written by Tulsa teenager Susie Hinton in 1967 and published in 1968. Director Francis Ford Coppola filmed his adaptation in Tulsa in 1982, releasing the movie with the same title nationally in March 1983. This house was one of several filming sites and has been restored and opened as The Outsiders House Museum.

Minnesota and I like the casual hum of the heartland.”

Here is where to explore that hum you might hear after landing at Tulsa Riverside Airport (KRVS), William R Pogue Municipal Airport (KOWP) or Tulsa International Airport (KTUL).

## The Outsiders House Museum

O'Connor never forgot the connection he made when he went to see the new Coppola movie “The Outsiders” in 1983. Not much of a reader, the 13-year-old had no idea it was based on a novel and didn't know the plot.

“I walked in the theater with no expectations and I left a changed kid,” the now 54-year-old said. “Even though the movie had a 1950s or 1960s vibe, I related to the characters in ways I'd never related to characters on the TV or movie screen before.”

Written by high schooler Susan Eloise Hinton using an initialized byline of S.E. Hinton, the 1967 book explores tension between the working class greasers and the affluent socs (pronounced soashes, as in social) through the eyes of 14-year-old narrator Ponyboy Curtis. While the

book does not mention Tulsa, the author has called it realistic fiction based on her experience at the city's Will Rogers High School. She was 15 years old when she started writing it and has said she didn't write for publication but out of frustration with the social situation at the school as well as the unrelatable literature available for her age group.

Though set in the mid-1960s, the topics of social acceptance, family issues and teen angst still resonate with adolescent readers: the book has sold more than 15 million copies around the world and remains on many school reading lists.

For O'Connor, it was the topics that spoke to him, from family struggles to feeling like an outsider after moving from New York to California at age 6, and stuck with him well into his career as Danny Boy in the trio House of Pain, best known for the 1992 hit “Jump Around.” He's referred to that decade as a downward spiral of alcohol and drug addiction. In 2009, sober for about four years, he was in Tulsa on tour with the supergroup La Coka Nostra. He had taken an interest in photography to keep him busy when he had a few extra days on the road between gigs. As he thought of places

to photograph in Tulsa, he recalled that one of his favorite movies had been filmed there.

Not finding much information online about “The Outsiders” filming sites, he paid a cab driver to help him find a few, including the Curtis brothers' house. He realized he was not alone in connecting with the story when a photo he took of the house and posted on social media went viral.

In 2016, he bought the house for \$15,000 even though he hadn't stepped inside. Once inside, he realized restoring the house to how it looked in the 1983 film was going to require a complete gutting. O'Connor raised money to restore it and opened it as The Outsiders House Museum in August 2019.

Bringing the museum to life became a community project and his passion. He engaged locals, fans across the globe, stars of the movie and connections he'd made through the entertainment industry to get the museum completed. Through Twitter, he connected with Hinton, who has provided her endorsement of the project, as well as supported the museum through donations of items, money and taking part in fundraisers.



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Photos of the young ensemble cast of eventual A-listers and production relics from the 1983 film adaptation are among the memorabilia displayed at The Outsiders House Museum in Tulsa.

The house looks like it needs a paint job, the furniture on the porch is rusted, the chain-link fence surrounding the corner lot dips in one spot – it's just like it appears in the movie, except that there's a new building in the lot behind the house that serves as a gift shop and additional exhibition space.

The porch and areas inside the house that were shown extensively on screen have period furnishings and faux wall treatments to match the condition of the house in the movie. There are fun details in these rooms, from autographs from the stars of the film who have visited the museum to replicas of props seen in the movie. Among the extensive memorabilia collection on display: screen worn clothing of the main characters, rare books, unpublished candid photography taken during filming and other unique items such as Coppola's director's chair from the set, signed production notes and scripts.

O'Connor says the museum will never be finished as he continues to add relics. Just last month he acquired the film's continuity binder filled with hundreds of never-before-seen photos, notes and pages of the shooting script.

The house is open for tours most weekends and also hosts special events; watch Facebook for the latest. Visitors also can rent the house for a private screening of "The Outsiders" or book private tours.

### Bob Dylan Center, Woody Guthrie Center and Guthrie Green

American Song Archives, a project of the George Kaiser Family Foundation, purchased the archives of Oklahoma-born folk singer Woody Guthrie in 2011, moving them from New York to Tulsa. The foundation's first big step in Tulsa's downtown arts district was turning an underused square





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Far left: The Woody Guthrie Center shares a converted warehouse with the Bob Dylan Center in downtown Tulsa's arts district. It's one of the oldest areas of the city and has become a creative hub with shops, restaurants, bars, galleries, museums, parks and historic music venues. (Courtesy: Woody Guthrie Center)

Left: The archives for Oklahoma-born folk singer Woody Guthrie, composer of "This Land is Your Land," are housed at the Woody Guthrie Center in Tulsa's arts district. This played a role in Bob Dylan choosing Tulsa for his archives and museum – Dylan credits Guthrie as an early influence on his music. (Courtesy: Woody Guthrie Center)

block into Guthrie Green, an outdoor gathering space and hub of activity that has hosted at least 3,000 events since it opened in 2012. The next year, they opened the Woody Guthrie Center in a renovated warehouse across from the greenspace. This certainly shaped Dylan's choice for his archives; Dylan credits Guthrie as an early influence on his music.

The Guthrie and Dylan centers share a large renovated warehouse, though each has its own entrance.

While I'd heard of Guthrie's eminent "This Land Is Your Land" song, I needed the 15-minute introductory film to appreciate his legacy. Don't miss the virtual reality experience just outside the theater that gives you an idea of his Dust Bowl upbringing. The remainder of the public space showcases artifacts such as instruments, writings and drawings often related to diversity, equality and justice alongside

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Pick up a free audio tour guide at the front desk of the Bob Dylan Center to explore audio and video clips as you walk through a chronological journey of the singer-songwriter's career.

interactive exhibits connecting his life with music and world history.

The Bob Dylan Center opened in May 2022 with about half of the 29,000-square-foot space open to the public via museum exhibits on two floors. A self-guided tour starts with an 18-minute documentary on the artist. You'll want to use one of the free audio tour guides available at the front desk for the rest of the tour. Most of the ground floor is a gallery with displays around the perimeter presenting a chronological journey through Dylan's career and a series of six columns in the middle of the room that take you through Dylan's creative process of writing, recording, producing and performing six different songs. These displays contain video and audio clips plus artifacts, from a coveted leather jacket worn by Dylan at the 1965 Newport Folk Festival when he performed electric for the first time to notebooks showing handwritten lyrics to songs.

The highlight of the second floor is a wall of artifacts. The only Dylan-owned guitar in the Tulsa collection is displayed here, along with hundreds of other items that will rotate from among the archives. There is also a screening room that includes never-before-seen film performances.



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## The Church Studio

About 2 miles east of the arts district, you can tour a fully functioning recording studio inside The Church Studio, which opened in March 2022 after a five-year historic renovation. The striking 1915 stone building started as a church and was converted to a recording studio in 1972 by Oklahoma-born music legend Leon Russell, who was inducted into the Rock & Roll Hall of Fame in 2011 by Elton John for his work as a musician, songwriter and producer.

Russell had returned to Oklahoma to break away from the rigid LA studio structure and formed the boutique Shelter Records label as a creative, musical ecosystem that he operated at the church until 1976. When he left, his engineer Steve Ripley and others continued operating the studio for several more decades. The building was unused and in disrepair when Tulsan Teresa Knox bought it in 2016.

She had grown up a music fan and at a young age started collecting memorabilia, including many items related to Russell and other artists tied to the Tulsa Sound, which Knox describes as less of a music genre and more of a “period in time where artists would come to Tulsa and find camaraderie in creating amazing music just for the love of music.”

You might see artists playing and recording when you visit The Church Studio (Kenny Loggins, Dropkick Murphys, Taj Mahal and others have recorded here since it reopened). There are displays on Russell’s life and career when you enter the building and a small room showcasing some of Knox’s 5,000-item memorabilia collection. At the time of my visit there were several archive cases highlighting Russell’s work with Dylan, Willie Nelson and Tom Petty, who signed his first record deal with Shelter Records.

## OTHER TULSA ATTRACTIONS TO CONSIDER VISITING:

**Tulsa Air & Space Museum** – open cockpits on a range of aircraft, exhibit hall, a simulated wind tunnel and more, plus a planetarium

**Greenwood Rising** – interactive museum and history center observing the 1921 Tulsa Race Massacre

**Philbrook Museum of Art** – historic home, world class art museum, 25 acres of gardens

**The Gathering Place** – free 100-acre riverfront park full of attractions and daily programming for all ages

**Route 66** – Tulsa’s 28-mile stretch of the famed, historic highway includes iconic roadside attractions such as Buck Atom’s Cosmic Curios along with dining and shopping

**Tulsa Zoo** – 400+ species on 85 acres across from the Air & Space Museum

**Gilcrease Museum** – world’s largest collection of art and artifacts of the American West (closed for renovation – check website for reopening)

## Cain’s Ballroom

It’s a live music venue first, but with the building turning 100 in 2024 and a long list of legendary performers, Cain’s Ballroom is a museum, too. The main room features original artwork from as far back as the 1930s when this garage-turned-ballroom was known as the “Carnegie Hall of Western Swing” with weekly dances organized by Bob Wills and The Texas Playboys.

If you’re able to get a glimpse inside the office (right behind the box office), you’ll see posters and photos from performers from the 1970s through recent years: INXS, The Police, U2, Van Halen and others performed here while on their way to stardom when music promoter/owner Larry Shaeffer helped establish Cain’s modern reputation.

It’s a bucket-list venue for musicians as well as concert-goers. Cain’s

is the kind of place where Green Day requested to play in front of 1,700 fans in July 2021 before launching its world tour in four days at the 40,000-seat Globe Life Field in Arlington, Texas.

The Rodgers family bought the venue in 2002 and completed a major renovation in 2003, including adding air conditioning, and also got Cain’s on the U.S. National Register of Historic Places.

“We breathed new life into a venue that had lots of music history and we’ve continued to add to that history,” said Chad Rodgers, who co-owns and runs Cain’s Ballroom with his brother Hunter. “Hopefully, we’ve made it better for many more decades to come. We want this place to live on forever.”

Can you hear that? If not, that means you’re not close enough to hear Tulsa humming. Check it out for yourself! **KA**

# King Air Gathering IN REVIEW

by Kim Blonigen



## KAG BY THE NUMBERS

132 King Air ops/owners

31 companions

70 aircraft models represented,  
~ 30 flew into KCRG

118 vendor/partners

41 sponsors

**T**he King Air Gathering (KAG) held April 12-14 at the World Golf Village in St. Augustine, Florida, was considered a success by its new coordinators, King Air Nation. Attendance and sponsorship numbers were up from last year with 132 King Air owners/operators joining the Gathering, along with 31 companions.

There were some updates to the program from previous Gatherings and overall, they were very well received. Those changes included: hosting the event at a resort destination to further the draw of attendees, separating presentations and the vendors' hall so conversations could continue as needed without interrupting presenters and adding a program for companions. This year's location allowed a space that hosts large meetings, making it easier to offer a variety of options and more room for more vendors to exhibit and show King Air owners/operators a variety of products and services.

The companion's program received great reviews as those who attended thoroughly enjoyed themselves.

Not only did they have access to attend any of the speaker sessions (including a Pinch Hitter/Ground School course by Tom Clements) and social activities, there were also special events planned especially for them: An introductory coffee/tea time, a "get acquainted" luncheon, the Textron Aviation-sponsored cooking demonstration and tasting experience by Food Network's Chef Amanda Freitag and a tour of the historic city of St. Augustine.

Another addition was the dinner hosted by Textron Aviation, followed by a live auction which, not only added some excitement to end the evening but raised money for three charities/causes: Mission Aviation Fellowship,



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## KING AIR HALL OF FAME: 2023 INDUCTEES

The 2023 King Air Hall of Fame inductees were announced at the King Air Gathering. Introduced at the 2022 Gathering, this award was long overdue to honor people – past and present – instrumental to building the Beechcraft King Air community.

Hall of Fame recipients must meet one of two of the following selection criteria:

- Would the King Air have ever been made without the recipient?
- And/or would the King Air have become the civilian aircraft with the longest production run in history without the recipient?

The following three recipients were honored in this second induction class, with an award made from an actual King Air propeller. The posthumous recipients are recognized with their award on display at the Beechcraft Heritage Museum in Tullahoma, Tennessee.

### RICHARD “RICH” BORN



Honoring the decades of contributions he made in selling the Beechcraft King Air by providing the finest service, in which he was recognized often by the company. His level of research, preparation and follow-up support with customers was unmatched. In addition, he gave selflessly of his time and amazing knowledge in mentoring his colleagues.

### *Posthumous Recipients*

### RAUL “ROD” RODRIGUEZ



His contributions as a Navy veteran, pilot, instructor, A&P mechanic and 34 years at Beechcraft West are legendary. His service spanned many different roles and he earned many sales awards including “Top Worldwide Sales Producer” in 1984 and the worldwide record holder for total King Air sales.

### JAMES D. “JIMMY” WEBBER



As Beech Aircraft’s chief engineer of Experimental Flight, he headed up the testing of Beechcraft’s new products, including being the pilot-in-command on the first flight of the iconic King Air on Jan. 24, 1964. Known as a tireless worker and strong leader, Experimental Flight Test had many good years under his leadership.



Beech Aircraft Corporation leaders congratulated the test pilots of the first flight of the King Air in January 1964. From left to right are: Jim Lew, vice president of Engineering; Mrs. Olive Ann Beech, CEO; Gregg Vaughn, co-pilot; Jim Webber, pilot-in-command; Frank Hedrick, soon-to-be president; and Wyman Henry, head of Sales and Marketing.



Rod Rodriguez (center) with his aircraft sales team.




Rich Born (right) doing what he did best, delivering King Airs and taking care of his customers.



Compassion International and the victims of the March 2023 tornadoes in Rolling Fork, Mississippi. Thanks to the generosity of the sponsors who donated items and services to the auction, King Air Gathering attendees will have contributed \$50,000+.

A survey was sent to all of the attendees of this year's Gathering for feedback on their experience. King Air Nation plans to listen to all comments and try to meet as many preferences as possible. So far, comments in support of expert-level speakers and breakout sessions continue to be positive as they have in years past. Feedback also has supported the move toward resorts hosting the event and developing companion attendance. Sponsorship requests for 2024 are already coming in. Next year, the airport is closer to the meeting center and festivities with attendees' and vendor's exhibit aircraft will be included in the program, which is sure to be a crowd favorite.

Make sure to mark your calendar for next year's King Air Gathering, being held at The Greenbrier in West Virginia, May 15-18, 2024. 






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A white and black twin-engine turboprop aircraft, the Halo 350, is shown from a side profile, parked on a tarmac. The aircraft features a high-wing configuration, a T-tail, and a series of oval windows along the fuselage. The background is a clear blue sky with some light clouds.

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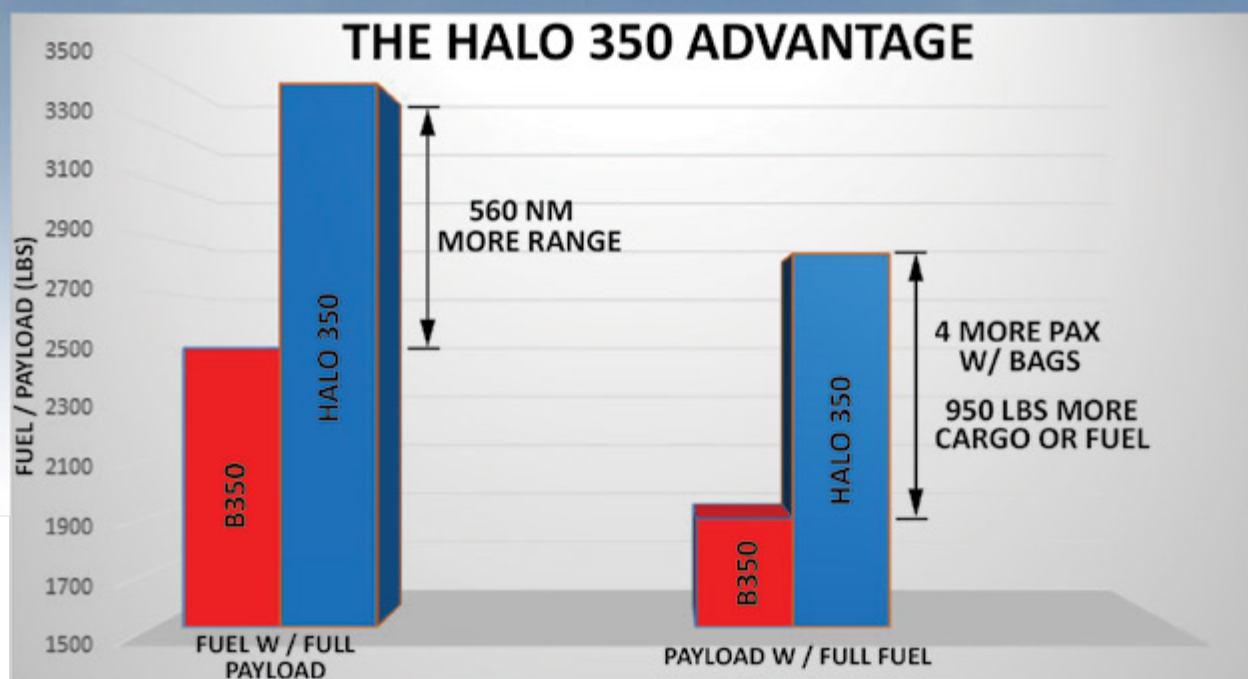


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Max Zero Fuel Weight	No Change <b>12,500</b>
Payload Increase	<b>950</b>

Weight and payload shown in pounds.

#### HALO 350 STC Kit:

The Halo 350 STC kit includes the STC, installation drawings and instructions, AFM Supplement, instructions for continued airworthiness documents, and the required parts and components (except common hardware items) for converting and operating a King Air 350 series airplane at a maximum takeoff weight of 15,950 pounds.

New safety systems installed are takeoff trim warning & ice mode stall warning.  
 Estimated installation labor hours: 20 hours

# Stories About Flaps

by Tom Clements

I'd like to tell you a few interesting things that I have experienced over the years involving flaps. I hope you will find them interesting and educational.

Let me begin by reviewing the basic flap system design in King Airs and, with minor changes, in most other Beechcraft airplanes. The semi-fowler flaps – ones that extend aft to increase the wing's chord as they go down – are driven by jackscrews and ride on tracks connected to the wing's rear spar structure ... two tracks and one jackscrew per flap segment or flap panel.

As my colleague, Dean Benedict, has written in this magazine, there are rollers, bushings and Teflon washers that connect each segment to its two tracks and it is unfortunately common to find these installed incorrectly, leading to track damage that can be time-consuming and expensive to repair. The jackscrews are driven by flex-drive cables that pass into the fuselage where they connect to a transmission or gearbox assembly that is mounted under the cabin aisle floorboards on the forward side of the rear spar.

Mounted beneath the gearbox is the drive motor – a 28-volt DC, reversing, electric motor. In this case, “reversing” means that it can run in two directions for up and down flap travel, depending on which of its dual field windings is energized. When the motor is running in the “up” direction, the “down” winding is acting as a generator, and vice versa. However, with no demand, no “load” placed on that generator it is providing insignificant resistance to motor rotation.

Unlike in Bonanzas and other models with a single flap panel per side, the two panels per side on the King Air require more power to operate and, in turn, there is more momentum to keep them coasting after the motor is no longer receiving power. This coasting momentum can drive all flap panels to the absolute limit of track travel, putting undesirable strain on the components.

To prevent this coasting travel, Beech uses a Dynamic Brake Relay. It does the following: Whenever power is

removed from one field winding, the other winding is now shorted to the airframe. This puts an “infinite” load on the winding that is acting as a generator. With huge resistance to rotation being provided by that winding and no longer any driving force being received by the other winding, the assembly comes to a screeching halt.

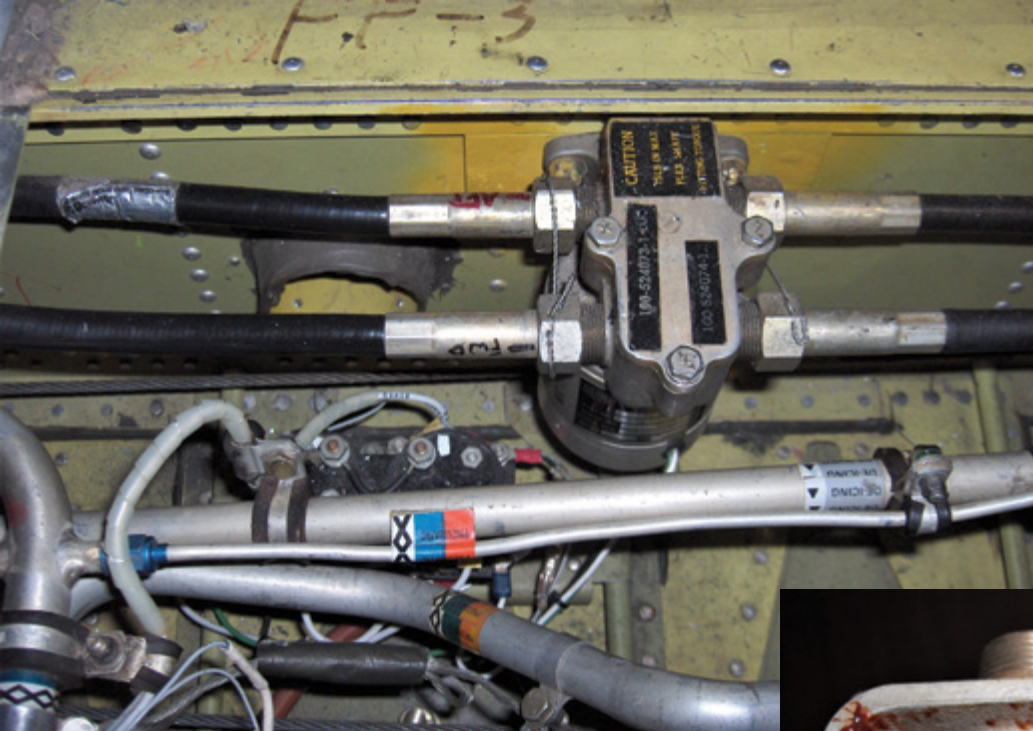
It acts as if some strong mechanical brake were suddenly applied to the motor's output shaft but it is all done by a magnetic field, not by a physical brake. Cool!

The Dynamic Brake Relay operates whenever the flaps hit a limit switch – Up, Down or Approach. It also activates in earlier King Airs – the ones in which the flaps may be stopped in any position between Approach and Down – when the flap handle is moved from Down to Approach while the flaps are extending between Approach and Down. The fact that the flaps will stop immediately means that when we want to put them at 60%, we can wait to move the handle from Down to Approach until we see the indicator pointing right at 60%. They won't coast on down to 65% or more, not with our Dynamic Brake friend!

What if they do coast a bit? If this is happening, you will likely also find no free play on the flaps when you move their trailing edges up and down on the preflight inspection since they have coasted to the ends of the tracks. The likely cause of this is a bad Dynamic Brake Relay or highly worn flap motor brushes.

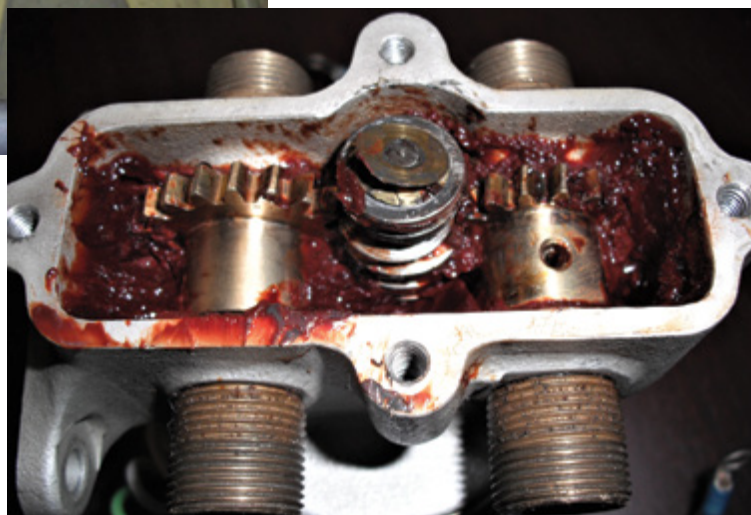
Back to the motor/gearbox connection: The output shaft of the motor acts as the “worm” that rotates two shafts, “worm gears,” one rotating clockwise and the other counterclockwise, or vice versa, depending on whether Up or Down is selected. Both left and right outboard flap segments are connected to one of these shafts and the inboard segments are connected to the other shaft. Although extremely rare, if one of these





The flap motor, gearbox, drive cables and Dynamic Brake Relay.

Inside of the flap gearbox or transmission showing worm and worm gears.



shafts experiences a stripped gear such that the motor cannot drive it, then we would lose both left and right inboard or both left and right outboard flap segments ... it would never present us with an asymmetrical situation.

In 1975, a colleague of mine was delivering a factory new E90 to Beechcraft West, a Beech distributorship in Southern California, located at Van Nuys (KVNY).

In those “good old days” no flight restrictions existed over the Grand Canyon so on their descent into Las Vegas for a refueling stop, they were enjoying the canyon views while descending near redline speeds over the Colorado River. As the passengers “oohed and aahed” their way in the descent while the pilot S-turned over the canyon, my friend suddenly felt the airplane balloon upward. “Oops, I think I just touched something!” said the passenger sitting in the co-pilot’s seat. It didn’t take long to realize that the passenger had accidentally moved the flap handle from Up to Approach as he was leaning over to look out of the left-side cockpit windows. (This incident led to Beech adding the little “wall” on the right side of the flap handle to decrease the chance that it could be moved accidentally.) The pilot retracted the flaps and continued to Las Vegas. He used 100% flaps for landing and all was well. But as he taxied to the FBO, Ground Control said, “Hey, King Air, your inboard

flaps are up, but your outboard flaps are still down. You aware of that?”

Until then, he was not aware of any problem. When the flaps were accidentally sent to the Approach position at a speed well over the limit, apparently the teeth on one of the transmission’s worm gears had been overloaded so that they were weakened enough such that they failed completely in another couple of cycles.

For split flaps to occur – by this we mean one segment being out of sync with the three others – we must have a jackscrew failure: Either the jackscrew itself is faulty or the jackscrew is not being driven by its drive cable: the cable broke internally or it became disconnected from the jackscrew or the transmission.

Twice in my flying hours I have personally experienced split flaps. Once was in an A90 – that I talk about in *The King Air Book* – and the other time was in a Duke ... that has a single flap segment per side, unlike the King Air. In both cases I was very pleasantly surprised to find that the outcome was basically a nonevent.

Further analysis suggests that this is not too surprising since the lift/lack-of-lift this malfunction causes has an asymmetrical force acting on the wing’s inboard area whereas the aileron and their trim tabs apply force on



The Split Flap Protection switch and its connections to both inboard and outboard flap segments.

the outboard area. Inboard: Less rolling moment arm; Outboard: More rolling moment arm.

Compared to the King Air 90-and 100-series, the 50-inch wider wing center section of the 200- and 300-series means that flap asymmetry will contribute more roll force than before. Therefore, these later models incorporate a Split Flap Protection system. As we have discussed, a drive shaft failure that renders both inboard or both outboard segments inoperative simultaneously leads to no roll tendency. It is only when one segment stops and the other three continue working that asymmetry occurs.

The Split Flap Protection system works in this manner: The Flap Control electrical circuit – the same circuit that

includes the switches that the flap handle actuates and the limit switches – includes two additional switches.

They are connected to the leading edges of the flaps, one on each side, between the inboard and outboard flap segments. (If the flaps are inspected while they are down, the switches are rather easily located and seen.)

As long as the two – inboard and outboard – flap's leading edges remain closely side-by-side, as they should, then that side's split flap switch remains closed. But if one segment fails to move while its neighbor moves correctly, the leading edges are no longer side-by-side and the switch opens. As soon as this occurs, the absence of control circuit power causes the Dynamic Brake Relay to



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instantaneously stop the motor and the still-operating segments. The POH tells us that the stopping action will take place by the time the flaps are 3°- 6° out of sync. Since full flap extension is 35°, it means we never exceed a 20% differential.

How do we handle this split flap condition? We cannot fix the problem. Until maintenance takes place, we are stuck with the flap setting that we now have. The obvious procedural change we need to address is to determine and use a new proper  $V_{REF}$  landing speed.

Since the flap position indicator gets its information from the right inboard flap segment only, realize that its position may not be the best measure of the overall average extension. "Eyeball" all of the segments, then make an educated guess of the proper speed, somewhere between the full flap and no flap  $V_{REFS}$ .

Before continuing, I need to clarify a minor item. The two split flap protections that I have been discussing did not become actual microswitches until 1979. All of the 300-series use the switches since they appeared later. But the 200-series, before serial number BB-425, use a surprisingly odd design. A standard 5-amp cylindrical fuse is mounted within a fuse holder, one with the springy metal clips that hold the fuse. A clamp connects a short wire to the fuse. When the 3°- 6° separation occurs, the wire yanks the fuse out of the holding clips, shutting down the circuit. Who came up with that plan?! As funky as it seems, however, it works quite well!

How often do King Airs have split flaps? Hardly ever. Perhaps of more interest is how often does the Split Flap Protection system malfunction and leave us with inoperative flaps even though the flaps themselves are fine? I have been pleasantly surprised to find that this additional safety feature has proven to be almost 100% trouble-free. Nice!

In 1985 I had the pleasure of flying with one of my recurrent training customers to attend the Paris Air Show. His model 200 was one of the first to be modified with all of the various Raisbeck Engineering King Air STCs that existed at that time. We met James Raisbeck in Europe and used the airplane, before arriving in Paris, for some demonstration flights. A number of these flights were in Norway. Landing on some relatively short strips perched on the walls of fjords was lots of fun and certainly showed the airplane to be exceedingly capable. Upon landing for an overnight stay in Bergen our flaps did not retract.

No CBs were popped and no burned-up-flap-motor odor had been detected. I wiggled the Up limit switch and it seemed normal. Maybe split flap protection problem? In our travel kit we had a small jumper wire with alligator clips on both ends. I jumpered around the left switch – easily accessible since the flaps were down – and tried retraction again: Nothing. Moved to the right side: Success! I took off one of the control circuit wires going to the switch and screwed it on to the other

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switch terminal, completing a circuit that bypassed the switch completely.

Legal? Of course not. A work-around to complete the mission? Yes. I will also add this: For the rest of that entire series of flights, until we safely arrived back in the States, I was always occupying a cockpit seat and watching the flaps carefully whenever they operated. Had any roll tendency developed I would have been a rather fast-acting human split flap protector! When I bid farewell to the owner-pilot I emphasized that now he should have his shop find and fix the actual switch problem. It was time to retire the "temporary" work-around.

A little over a year later I was preflighting this same airplane during a recurrent training session. You guessed it: The switch was still bypassed. We did not fly until it got fixed. In another episode that I included in *The King Air Book*, I came across a 200 that was totally missing split flap protection switches on both sides. They were simply not there and the wires were screwed together to bypass them. By the next day they had been "found" and reinstalled, so we finally flew ... a head-scratcher for sure.

One of my more recent articles, dealing with descent planning, was entitled "Just Because You Can, Doesn't Mean You Should." I will close this month by applying that same principle to flap operation ... landing gear, too. As you know, there are maximum speed limits for flap and gear operation. When you get behind in your descent and approach planning and/or ATC is not making it easy for you, that's when you are justified in extending the flaps and/or gear right at the maximum speed limit. But normally? With proper planning and execution? There is no reason for continually utilizing the limits. Your equipment will be subjected to a much easier life if we include a 20- or even 30-knot buffer, delaying extension until we are well below the limits. It might even save a few maintenance dollars! **KA**

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King Air expert Tom Clements has been flying and instructing in King Airs for over 50 years and is the author of "The King Air Book" and "The King Air Book II." 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 books, contact Tom direct at [twcaz@msn.com](mailto: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](mailto:editor@blonigen.net).





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# Walter's Warbird

**The Beechcraft Model 17 was not only Walter Beech's bestselling airplane during the late 1930s, but it proved to be a military workhorse that served the Allied nations with distinction during World War II.**

by Edward Phillips

**W**alter Herschel Beech was a salesman – a very good salesman. He and his wife, Olive Ann, had co-founded the Beech Aircraft Company in 1932 and by the mid-1930s had come perilously close to bankruptcy more than once. Working together as a team along with their handful of employees, they barely managed to survive the vagaries of a ruthless economic depression. By 1939, however, the future looked much brighter. Market dominance of the Model 17 cabin biplane and the growing popularity of the all-metal Model 18 had propelled sales to the million-dollar mark for the first time in the company's history.

Military sales were not high on Walter Beech's list of priorities, but he did realize that there was a small, but profitable, market for the Model 17 in uniform. The United States Navy was the first to acquire a military Beechcraft. In 1936, a C17R was delivered to the service under the designation JB-1. Three years later, the U.S. Army held a competition to acquire a fast, efficient utility transport. The D17S defeated its opponents and three airplanes were ordered carrying the designation YC-43.

These ships were "off-the-shelf" commercial airplanes fitted with minimal military-specific equipment. No technical changes were required to meet the Army's specifications. Delivered in June 1939, all three YC-43s were assigned to duty as transports for military and government personnel serving at the American embassies in London, Rome and Paris. Not to be outclassed by the Army, the Navy soon placed an order for seven D17S biplanes under the designation GB-1. These airplanes were assigned to naval bases and air stations where they served as liaison and VIP transports.

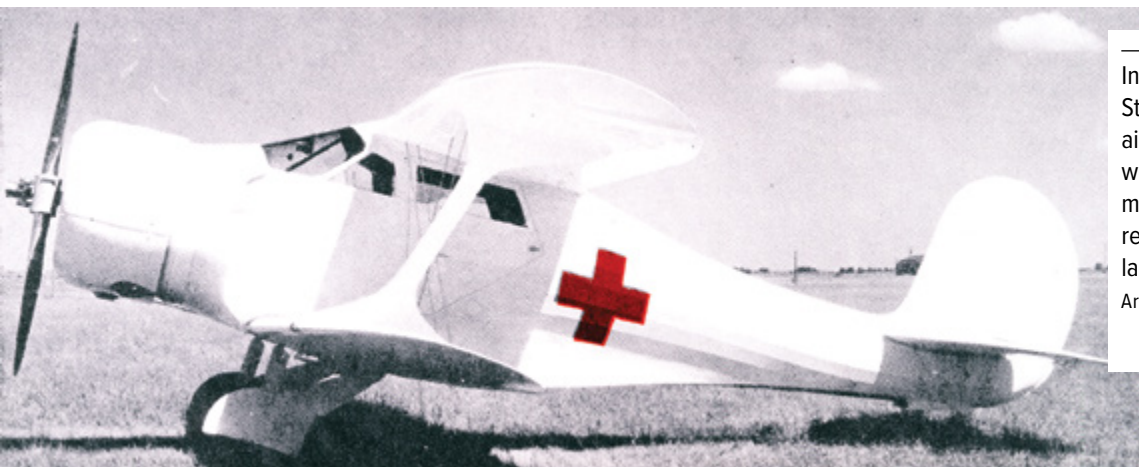
The Army and Navy, however, were not the only customers who saw the value of Walter Beech's Staggywing as a military machine. The Brazilian Navy added to the company's order book when it plunked down a handsome check for two Model D17A airplanes in 1939. Delivered in November 1939, both ships were powered by a Wright Aeronautical R-760 static, air-cooled radial engine rated at 350 hp. Before America's entry into the war in December 1941, Beech Aircraft Corporation (the name was changed from "Company" to "Corporation" in September 1936) sold an undisclosed number (possibly as many as 11) of modified Model D17S aircraft to China. Painted white overall with large red crosses on the fuselage and above the cabin, they operated as air ambulances during that nation's war against the invading Japanese.

To this day these airplanes are surrounded by an aura of mystery. Very little is known about their modifications and delivery. Although photographs exist that were taken at the factory and in China, no records within Beech Aircraft's archives are known to survive that document





All of the Staggerwings built for the United States and its allies during World War II were based on the commercial Model D17S. The only changes between different versions, such as the UC-43 for the U.S. Army Air Forces, the U.S. Navy's GB-2 and the Mk. 1 Traveller for the British, centered on specific military equipment. (Edward H. Phillips Collection)



In 1937, China ordered a batch of Staggerwings modified to serve as air ambulances. These airplanes were painted white overall and marked appropriately with a large red cross on each side of the fuselage. (Special Collections and University Archives, Wichita State University Libraries)

their existence. In the 1970s, the author made inquiries to Beech Aircraft regarding information about these unique airplanes, but every request was met with a courteous, but firm, dismissal.

When Adolf Hitler plunged Europe into war in September 1939, Great Britain and France honored their pact with the Polish Government and took up arms against Germany. In response to pleas from Prime Minister Winston Churchill for help, in March 1941 President Franklin D. Roosevelt and Congress implemented the Lend-Lease Act that provided the British with the weapons they needed to fight back against the Wehrmacht on land, the *Luftwaffe* in the air and the *Kriegsmarine* on the sea.

After the conflict, hundreds of war-weary Staggerwings found their way back into civilian hands and soldiered on for many years, eventually becoming classics highly valued for their design, comfort and performance. Walter Beech did make one final attempt to resume production of the famous biplane with introduction of the Model G17S in 1945. The advent that year of the all-metal Model 35 Bonanza, however, sounded the death knell for steel tube and fabric biplanes. (Edward H. Phillips Collection)





A factory-fresh UC-43 flies over the Kansas countryside on a test flight before delivery to the U.S. Army Air Forces. More than 400 UC-43s were built during the war. (Special Collections and University Archives, Wichita State University Libraries)

In the wake of the president's Lend-Lease initiative, a flood of orders for military Model 17s arrived on Walter Beech's desk. Among these was a special Staggerwing to be built to specifications for Crown Prince Bernhardt of the Netherlands, whose government had relocated to England after the Nazis conquered the Low Countries in 1940. The Crown Prince was an avid and competent pilot, and in May contributions received from Dutch Americans allowed the Netherlands Purchasing Commission to order the D17S and its 420-hp Pratt & Whitney static, air-cooled, nine-cylinder radial engine.

The airplane was shipped to England and was delivered to the Royal Air Force (RAF) in October 1941. Painted in standard camouflage using a pattern and colors dictated by the RAF, including roundels and fin flash on the vertical stabilizer, the colorful *Staggerwing* aircraft was flown by Bernhardt to visit Dutch squadrons and for diplomatic missions involving the exiled Dutch Government.

The surprise attack on Pearl Harbor, Territory of Hawaii, by the Imperial Japanese Navy Dec. 7, 1941, plunged America into a two-front war that would last nearly four years. Production of commercial aircraft quickly came to halt as manufacturers of aircraft engines and airframes retooled their facilities to support the war effort. Beech Aircraft Corporation was no exception and delivered its final four civil biplanes to customers in January 1942, bringing total prewar production to 353 airplanes.

Although many military Staggerwings built from 1942-1945 were produced for Lend-Lease to America's British, Chinese and South American allies, a majority were manufactured for service with the U.S. Army and Navy. These airplanes were built in a separate facility located south of the main factory, which was dedicated to producing military versions of the twin-engine Model C18S. To help meet the costs of escalating contract obligations, Walter and Olive Ann Beech ordered

expansion of the second facility, known as Plant Two, in order to accommodate a much higher rate of production to meet demand. In addition to significantly expanding floor space, money from the Reconstruction Finance Corporation was used to increase size of the airfield by 320 acres and increasing length of the north-south runway to nearly 5,000 feet.

By the end of the war in 1945, the company had built 412 C/UC-43 and GB-2 aircraft. Of these, the Army Air Forces and the Navy took delivery of 270 ships, but various batches of these were soon reassigned to Allied air forces through provisions of the Lend-Lease Act. A total of 122 GB-2s were accepted by the Navy, and the remaining 20 airplanes were acquired by the Brazilian government for its air force. Great Britain's Royal Air Force (RAF) and Royal Navy received 105 aircraft that were designated Traveller Mk. 1, including 74 that were assigned to the Fleet Air Arm land bases.

These airplanes were flown extensively within England transporting high-ranking officers of the British Admiralty and Allied forces. The RAF shipped 18 Traveller Mk. 1s to the Middle East, but all were lost at sea when the transport S.S. *Argurmonte* was sunk by a U-boat May 29, 1943, off Cape Province, South Africa. The RAF eventually operated a small number of Traveller Mk. 1s on reconnaissance missions and patrols along the Suez Canal and above the Red Sea in search of enemy submarines.

Detailed information about combat operations of UC/C-43 and GB-2 aircraft in the European and Pacific Theaters of War is minimal at best, but some interesting tidbits do exist. For example, in the December 1994 issue of the Beech "Log" (an in-house publication) a UC-43 flown by Col. Lloyd O. Yost was reported to be standing up well under the harsh, jungle environment of the South and Central Pacific regions. Yost used his UC-43 to fly emergency missions in support of local troops from short, unimproved airstrips. He praised the airplane's



ability to take off and climb over obstacles (usually tall palm trees) at maximum gross weight.

As for the Navy, which also operated its GB-1 and GB-2 Staggerwings in the Pacific, pilots flew missions similar to those performed by Yost. Occasionally these light transports carried high-ranking Navy and Marine officers, but more often they were kept busy ferrying pilots from reserve pools to new squadrons, carrying mail and other small cargo, or flying as navigation aircraft leading Navy and Marine fighters from one island to their new base on another island.


One undated account of these navigation flights that resides in Beech Aircraft's archives mentions "little commercial Beechcrafts" that served as pathfinders for the fighter pilots. The UC-43 and GB-1/GB-2 ships fit this mission well because they were equipped for instrument flight and could navigate more effectively, ensuring that pilots did not become lost or disoriented above the vast Pacific Ocean. Although very little information is available about the exploits of these "little commercial Beechcrafts," there is little doubt that the UC-43 and GB-1/GB-2 versions played an important part in flying specific missions in combat areas.

Beech Aircraft terminated production of the UC-43 and GB-2 series in September 1945 after building 312 airplanes during the war. Many war-weary Staggerwings found their way back into civilian service through surplus sales conducted by the Reconstruction Finance Corporation, which sold UC-43 and GB-2 airplanes for a fraction of their original cost to the U.S. government. In accordance with provisions of the Lend-Lease Act, the Royal Navy returned a majority of its Traveller Mk. 1s to the United States. These ships were issued new serial numbers, declared surplus and were either sold or scrapped. Other ex-RAF and Royal Navy aircraft were sold to civilians in England.

All C/UC-43, GB-2 and Traveller Mk. 1 airplanes built during the war were based on the commercial D17S, but a large number of older Model 17s were impressed by the War Department after the attack on Pearl Harbor. Of these, one B17R served as a UC-43H and one C17R was designated as a C-43E, while 13 D17R were designated C-43A and a single D17A became a C-43F. As for the D17S, a total of 25 were operated by the U.S. military under the designation C-43B. During the war some of these airplanes crashed or were damaged beyond repair, but surprisingly, many survived and were returned to their owners or sold to other buyers.

A majority of Staggerwings flying today are ex-military airplanes, chiefly D17S models. Beech Aircraft Corporation manufactured more Staggerwings during

the war than all of commercial production from 1932-1940. According to official records at Beech Aircraft Corporation, from 1932-1948 total production of the classic Model 17 series came to 785 aircraft.

The Beechcraft Model 17's performance throughout the war served to further reinforce its reputation as a reliable aircraft that proved to be well suited to the rigors of military service. It had flown above the desert sands of the Middle East, ferried supplies and personnel across the European and Pacific Theaters of Operation, and had accompanied American forces as they island-hopped across the vast Central Pacific in a campaign to subjugate Japan. 

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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, Kansas. 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.





### **Halo 350 Conversion Available for King Air 350 and 360 Models**

CenTex Aerospace announced the availability of the Halo 350 increased gross weight conversion for the Beechcraft King Air 350 and King Air 360. The Halo 350 conversion increases the maximum takeoff weight limit from 15,000 to 15,950 lbs. Aircraft empty weight is increased only 4 lbs., which equates to an increase in payload or fuel of 946 lbs. The completion of the project comes after a lengthy, thorough and exhaustive effort to substantiate the conversion to the applicable Federal Aviation Administration (FAA) regulatory requirements.

Two new safety systems are installed as part of the conversion. A takeoff warning system that alerts the pilot when the pitch trim is not properly set and a takeoff is initiated. An “ice mode” is added to the stall warning system that improves the accuracy of a stall warning when ice is present on the wings. Also, high-strength bolts replace the original main landing gear hinge bolts. Labor to install the conversion is approximately 20 hours. An airplane flight manual supplement with a comprehensive set of performance data is provided as well as instructions for continued airworthiness and installation instructions

and drawings. All of the needed items are included in the Halo 350 kit.

For more information, contact CenTex Aerospace, Inc. at [centex.aero](mailto:centex.aero) or 254-752-4290.

### **Raisbeck/Hartzell Five Blade Propellers Receive STC Approval for Heavyweight King Air 300, 350 and 360**

Raisbeck Engineering recently announced it has received FAA STC approval for the installation of Raisbeck/Hartzell five blade swept turboprop propellers on heavyweight (16,500 lb.) King Air 300, 350 and 360 series aircraft.

The Raisbeck/Hartzell five blade swept turboprop propellers offer improved aircraft performance. This includes increased thrust and cruise speeds, decreased noise levels, and improved landing deceleration and accelerate stop. Constructed of carbon fiber composite and nickel cobalt leading edges, the propellers provide unlimited blade life while weighting 54 lbs. less than the OEM propeller.

“We are thrilled to have received STC approval from the FAA for our revolutionary propeller design,” said Hal



Chrisman, president of Raisbeck Engineering. “Our team has worked tirelessly to extend the benefits offered by our five-blade composite propellers to operators in diverse roles requiring heavyweight aircraft such as Air Ambulance and ISR. These props are quieter and lighter, improve performance, last forever and they look awesome on the ramp! I am confident it will be a winner for both our customers and Raisbeck.”

Since 2017, Raisbeck Engineering has been producing five-blade props for 15,000 lb. King Air 300 series. This new STC (SA02559SE) is applicable to King Air B300, B300C (MC-12W) and B300C models. They are available now for purchase and installation through Raisbeck’s authorized dealership worldwide.

For more info, visit Raisbeck’s website at [Raisbeck.com](https://www.raisbeck.com)

### **PWI Expands LED Ice Light Product Line with New Threaded Mount Version**

PWI has expanded the already-PMA approved bayonet mount LED Ice Light product and is now offering a new PMA-approved version which features a threaded mount.

This product illuminates the leading edge of the wing to aid in detecting ice formation. The light performance



has received much positive feedback relating to light output and longevity.

Owner/operators have found that the aircraft bayonet light socket can be prone to corrosion. By removing the light socket entirely, the PWI Threaded LED Ice Light can be installed directly to the aircraft light bracket. The heavy threads on the base of the LED light secure it to the aircraft, and also allow for the installed light to be easily aimed at the cover window – a necessary step for any light replacement. Once the light is aimed, the supplied nuts and washers secure it to the aircraft. Connecting



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the two wires on the LED light to the two wires that formerly supplied power to the bayonet light socket completes the simple installation.

The Threaded LED Ice Light is PMA-approved for several Beechcraft and Cessna products including the King Air 90 series, 100 series, 200 series and 300 series. The King Air can also replace aging ice light windows with the PWI PMA-approved Ice Light Window for a complete safety upgrade.

PWI continues to manufacture the bayonet mount LED Ice Light for those owner/operators who prefer to retain the original bulb light socket, as well as those who do not have a light socket with corrosion.

#### Product Specifics:

Part Number: 7310045-000;  
PMA: PQ4159CE, Supplement  
Number: 24

- Up to 100,000 hour service life
- 730 Lumens (more light than the replaced bulb)
- Far lower power draw than a bulb
- Much less generated heat – preserving the window life
- Replaces A7079B24, MS25338-7079 and WA7079B24 bulbs
- Vibration resistant
- Operation temperatures: -55°C to +70°C
- Three-year warranty

PWI is the OEM for most King Air interior lighting, extending a decades-long history of OEM fluorescent lights for business jets. New FAA-approved LED aviation upgrades can be purchased direct or through our growing authorized dealer and distribution network. For more information, contact PWI at +1 316-942-2811 or contact sales at [sales@pwi-e.com](mailto:sales@pwi-e.com).

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## Pilots N Paws® is an online meeting place for pilots and other volunteers

who help to transport rescue animals by air. The mission of the site is to provide a user-friendly communication venue between those that rescue, shelter, and foster animals; and pilots and plane owners willing to assist with the transportation of these animals.

A general aviation transport requires just one pilot volunteer and is far more efficient and dependable than time-consuming ground transportation for these animals who are often in danger of euthanization. Volunteer pilots retain complete authority of their planning and flights, and can give as much or as little time as they like.

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1. Go to [www.pilotsnpaws.org](http://www.pilotsnpaws.org) and register
2. Post your information and read other posts
3. Wait for contacts / make contact with others



### WHY JOIN THE PILOTS N PAWS NETWORK?

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- Flights are tax-deductible 501c3
- Expand your network of pilot/aviation contacts and other professionals
- Gain flight experience and log more hours
- Explore new geographical areas
- An extremely rewarding experience every time



**Pilots N Paws®**  
**[www.pilotsnpaws.org](http://www.pilotsnpaws.org)**




## SmartSky Launches Capability to Keep In-flight Data Secure from End to End

SmartSky Networks, the innovative air-to-ground (ATG) in-flight connectivity provider, announced the launch of SmartSky Private Intranet (PI) routing powered by its Skytelligence services platform. The PI is deployed using an aircraft interface device (AID) and routes data traffic privately to and from the aircraft utilizing SmartSky's next-generation network and patented beamforming technology that assigns a separate connection to each aircraft with no bandwidth sharing like what is found on other airborne networks. Once the data traffic reaches the SmartSky ground network, it is securely routed through one of the company's three private data centers directly to the customer's corporate enterprise network giving aircraft owners and operators the option for their in-flight data traffic to completely bypass the internet and to determine how and when it is routed externally. SmartSky PI enables the aircraft to function as a true node on the customer's corporate enterprise network instead of as an exception.

SmartSky PI is made possible by the company's proprietary Skytelligence services layer that connects the AID to the SmartSky ATG network and moves the

customer's data traffic according to their specifications. This combination of a secured IFC network, AID and direct custom routing of data traffic to a corporate network represents the first-ever, end-to-end private in-flight Wi-Fi connection. This makes a VPN unnecessary when using the airborne network and secures not only the transfer of data to and from the cabin but also all other aircraft data transferred while in flight.

The PI service enables aviation customers with SmartSky-equipped aircraft to add a new level of security to their in-flight data beyond the cabin Wi-Fi, now including electronic flight bags (EFB) and aircraft health monitoring. Accessing 60 MHz of spectrum in the unlicensed band, the SmartSky in-flight connectivity network utilizes 20 times the bandwidth of legacy ATG systems. This means plenty of capacity and sustained performance for aircraft operations as well as the real-time transfer of critical maintenance and performance data. This means the cockpit can now be more responsive to changes in flight conditions, improving safety and flight efficiency. Vital flight data can be offloaded in flight to allow ground crews to be prepared for maintenance needs upon landing, reducing AOG time.

For more information, visit: [SmartSkyNetworks.com](http://SmartSkyNetworks.com). 



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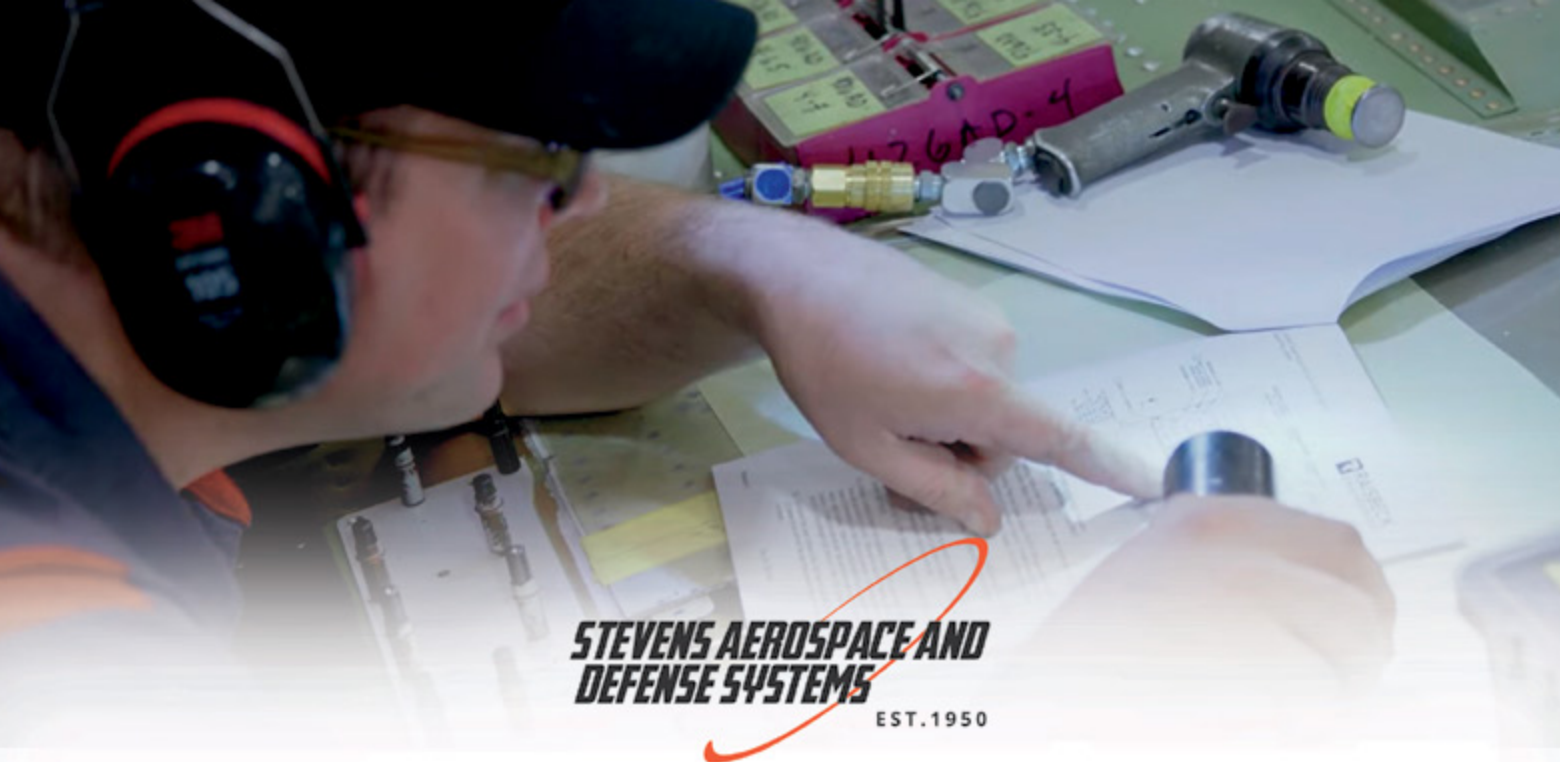


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