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COVER PHOTO

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2 Cover Story – Soaring with Condors: Flying To and Touring Pinnacles National Park by Matthew McDaniel

12 King Air Gathering – Registration is Open! *by Kim Blonigen*



16 Maintenance Tip – King Air Cabin Windows – Pane Management 2.0 *by Dean Benedict*

22

Ask the Expert – Lever Lock Switches ... and a Few That Look Like They Are, But Aren't *by Tom Clements*



26 In History – Thunder Birds – The Mighty Beechcraft A17 Biplanes *by Edward H. Phillips*

30 Value Added

32 Advertising Index

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COVER STOR

Pinnacles National Park in central California is one of the smallest in the national park system, making it a bit of a hidden gem. Though it has had national monument status since 1908, it was designated a national park just 10 years ago.

Flying To and Touring Pinnacles National Park

by Matthew McDaniel | Photos by author unless specified otherwise

s we approached the summit of the High Peaks Trail, menacing Turkey Vultures circled overhead. Their inky black feathers and scarlet heads contrasted sharply against the pale blue sky as they effortlessly soared over the cliffs surrounding us. Riding thermals between and around the craggy spires, then crossing the valleys again to repeat each circuit, their display was the epitome of energy management. Reading air currents via pure instinct residing deep within their DNA, their ability to capitalize on rising air while minimizing their exposure to descending air would be the envy of any glider pilot. The display was enough to hold the attention of any person intrigued by the mysteries of the air and the creatures who call it home. If you are such a person, and find yourself with some downtime at any of the many airports within California's South Bay or Salinas Valley areas, consider a visit to the largely unknown Pinnacles National Park.

Hiding in Plain Sight

If your flying missions have ever taken you to the central coastal regions of California, you've likely been close to Pinnacles National Park (PNP) without even realizing it. It is less than 50 miles from the scenic Pacific Coast Highway drives through Big Sur, Pebble Beach and Monterey Bay. Pinnacles is relatively new within the national park ranks and far less known than some of its in-state siblings, such as Yosemite, Sequoia and Death Valley. It has been protected by the National Park System (NPS) for over a century, having been designated a national monument in 1908. However, it wasn't until 2013 that it was upgraded to national park status, making its 105-year gestation from monument to park one of the longest in NPS history. It's a sparkling gem and the smallest of California's nine national parks (and 57th in size, among the current 63 U.S. National Parks). Covering less than 27,000 acres, Pinnacles is perfectly sized for day visitors.

While one could certainly make repeat visits and take in different sights each time, pilots passing through the area could easily get a great taste of PNP in a single day trip, whether they are solo, laying over with crew members or on a family adventure. Pinnacles is only a 1½- to two-hour drive from major hub airports such as San Francisco Int'l (SFO), Oakland Int'l (OAK) and San Jose Int'l (SJC). Monterey (MRY) and Salinas (SNS) Airports (Class C and Class D airports, respectively) are within an hour. Additionally, a variety of small, pilotcontrolled airports are even closer, with the nearest two being King City's Mesa Del Rey Airport (KIC) to



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the south and Hollister Airport (CVH) to the north. Both have runways plenty long enough for most King Air operations. Even a few likely King Air destinations within the Central Valley are within a couple of hours' drive time. Those include the Class C Fresno Yosemite Int'l (FAT), Madera (MAE) and Merced's two airports (MER and MCE). Best of all, all the above airports offer fuel, pilot services and instrument approach procedures (IAPs). Most offer rental cars, as well. Although, never assume and call ahead for specific details on available service and transportation options.

Stark Contrast

One thing any pilot who's flown much within California can attest to is the incredible variety of both nature and humanity within the Golden State. Rocky coastlines, vast deserts, intriguing islands, rugged mountain ranges, dense forests, urban sprawl and tiny rural communities all surround the enormous Central Valley. There, abundant harvests of fruit, vegetables and nuts are grown in such quantities they've earned the region the nickname "America's Salad Bowl."

Yet, there is something oddly out of place in the Salinas Valley and the Gabilan mountains. Remains of an ancient volcanic field have been shaped by eons of erosion into the foothills, caves, spires, cliffs and ramparts that now make up Pinnacles. But, only about two-thirds of that volcanic field is within PNP. The remaining portion is not simply outside the official park boundaries, it is 195 miles southeast, totally detached from its prehistoric neighbor. The reason is another one of California's famous features - The San Andreas Fault. Running just east of PNP, the active fault line's ever-moving tectonic plates split the volcanic field and have separated its components over millions of years, leaving Pinnacles as a unique topography within the surrounding landscapes. Additionally, the shifting of those same plates has helped create one of PNP's most fascinating features: its above-ground caves. Known as talus caves, they form (and change) as earthquakes topple boulders into and across deep and narrow gorges. Singularly or in clustered piles, the boulders span the gaps between rock walls, creating "ceilings" and blocking most (and sometimes all) light from reaching within. Yet, they are not truly subterranean.

Similarly unique to Pinnacles is its wildlife. The talus caves attract a variety of bat species, all of which rest peacefully during most daylight hours. The soaring conditions created by the winds and terrain features, attract large raptors and scavenger birds alike. A variety of hawks, ravens, and vultures are common within PNP and are fairly easy for even the casual tourist to spot. Die-hard birders (and pilots too, I suspect) all hope to see one bird in particular, though. The massive California condor was brought back from the brink of extinction thanks to a decadeslong captive breeding program. They were reintroduced into areas "Weighing 20 pounds or more, with wingspans up to 9 ½ feet, they can fly at 55 mph and soar to altitudes of 15,000 feet."

> The California condor population was brought back from the brink of extinction due to a successful captive breeding program, and some being reintroduced to their natural habitats including Pinnacles National Park. (Credit: National Park System)



features is its above-ground caves known as talus caves."

The author's wife and daughter exit the Moses Creek Trail to enter the talus cave area along the Bear Gulch Cave Trail.

they were known to inhabit naturally, including both Grand Canyon and Pinnacles National parks.

The condors routinely fly from those areas to the Pacific coast and back, sometimes nonstop. For those lucky enough to spot one or a pair, they are an impressive sight to behold. Weighing 20 pounds or more, with wingspans up to 9 ½ feet, they can fly at 55 mph and soar to altitudes of 15,000 feet. Their ability to spot, procure and survive on the scraps left behind by less hardy species is no less impressive. The abundance of aerial wildlife, in general and the condors, in particular, within PNP is the reason that VFR aeronautical charts for the area warn pilots to remain 3,000 feet above ground level (AGL) or higher when overflying the park. This is slightly higher than the standard 2,000 feet AGL that pilots are required to remain above wildlife areas, national parks and other protected lands.

Gulches and Peaks

Touring within PNP doesn't require a great deal of preplanning for simple day trips. However, understanding the basic geography of the area is critical to making the most of your time. The most important element to understand is that, unlike many national parks, there is no scenic drive that traverses the park. It has two entrances (west and east), but the roads that bring you to each do not connect within the park. If driving from one entrance to the other, one must circumnavigate the park and allow a couple of hours' time to do so. Of course, there is plenty of scenic driving to be had on each side of the park, but the most dramatic vistas and experiences must be accessed on foot, via the many trails that emit from each side of the park and meet within its heartlands.

We had flown into the South Bay area (SJC, specifically) and driven to the Monterey and Carmel-by-the-Sea areas for casual sightseeing. Nonetheless, I elected to drive into the park via the east entrance, rather than the slightly closer west gate. I did so because I'd read good things about the picturesque drive down Highway 25 and Pinnacles Parkway, which proved worthy of the accolades. Additionally, the (East) Pinnacles Visitors Center is far more active and offers a free weekend shuttle to the Bear Gulch region (which gets you deeper into the park while alleviating parking concerns). This proved perfect for us, given that we only had a single day available.

The trail system within PNP allows hikers to take long perimeter hikes of 10 miles or more around the central park sections where the most noteworthy natural wonders are clustered. However, more casual walkers/ sightseers can choose a variety of shorter hikes that



effectively shortcut the longer loop trails. For those who have the time and fitness levels to take in the more distant sights, the North Wilderness Trail snakes 7 miles through the park's backcountry, while the Chalone Peak Trail heads 5 miles (each way) into the southern portions of the park, including to the two highest peaks (each around 3,300 feet elevation). Our goal was to experience both the talus caves and the high pinnacles, while keeping our hiking time within reason.

While the most impressive talus caves are on the Balconies Cliffs Trail, it was on the opposite (west) side of the park. So, we began our trek on the Moses Spring Trail and took the Bear Gulch Cave side-trail in order to get at least a little exposure to talus caves. Climbing out of the talus caves, on that route, put us at the Bear Gulch Reservoir, a perfect spot for a picnic lunch and some relaxing wildlife viewing. With bellies refueled, we proceeded up the Rim Trail and High Peaks Trail. We elected to tackle the steep and narrow sections (rated as "strenuous," in places), but there is a more moderate (though slightly longer) detour, if you prefer. This was the highlight of the day, making the effort well worth it for the up close and personal views of the pinnacles and the soaring birds. The sections of trail that included single human foot sized steps carved into the steep rock faces were great fun for the teenagers and created a great appreciation for the work that goes into creating these trails and maintaining them for public

use. Descending from the High Peaks, we circled back to Bear Gulch via the Blue Oak and Condor Gulch trails. Our 6.1-mile hike was certainly a bit tiring but equally rewarding. Since we did it in a leisurely fashion, taking plenty of food, drink and photo breaks, it was entirely manageable with two teenagers in tow and needing only to carry very light backpacks.

California Dreamin'

Pinnacles National Park is open all year, with the most popular seasons being spring and fall. Temperatures are generally agreeable from October to May but can become quite hot in the summer months (especially if combined with strenuous hiking). Our late-March timing provided comfortable temperatures and pleasant conditions. We removed layers of clothing as the cool cave routes opened into sun drenched clearings, only to add them back again as the whipping winds in the higher elevations cooled us back down from the sweaty climbs. On average, about 200,000 visitors enter PNP per year. In spite of that number rising during the recent COVID years, dense crowds are not (yet) a concern and we never found ourselves feeling crowded. Quite the opposite, in fact.

In 1850, California became the 31st state and over the next century it became the most populace state. Today, in spite of its nearly 32 million residents, vast stretches of



Inside the talus cave of the Bear Gulch Cave Trail. Some light sneaks through gaps in the boulder roof, but the depths of the cave remain quite dark, even near midday. Because the eyes have little time to adjust from the brightness outside the entrance, wise hikers will have headlamps or flashlights at the ready to help navigate the cave's narrow passages and sometimes slippery and uneven footing.









California remain sparsely inhabited and feel as rural and remote as some of the least populace states. For aviators, California's diversity can be both enticing and challenging. Sporting over 500 airports, about half of which are public use, there are few areas you might wish to explore where a suitable airport cannot be found nearby.

Thus, the question becomes one of circumstance. Will you visit Pinnacles National Park because you are in the area anyway with some idle time to fill? Or will you visit simply because it is so close to many airport choices and, therefore, makes a great excuse to plan a fly out for a day or weekend excursion? Either way, you won't be disappointed and will likely depart with thoughts of how and when you can find another reason to return to Pinnacles and soar with its condors again (metaphorically speaking, anyway). 🖾

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Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI & IGI and Platinum CSIP. In 33 years of flying, he has logged over 21,000 hours total, over 5,800 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 a Boeing 737-Series Captain for an international airline, holds 8 turbine aircraft type ratings, and has flown over 125 aircraft types. Matt is one of less than 15 instructors in the world to have earned the Master CFI designation for 10 consecutive two-year terms. He can be reached at: matt@ progaviation.com or 414-339-4990.

KING AIR GATHERING



Registration is Open! King Air Gathering

April 12-14, 2023 • St. Augustine, Florida

by Kim Blonigen

egistration is now open for King Air Gathering 2023 being held at the World Golf Village (WGV) in St. Augustine, Florida, Wednesday, April 12 through Friday, April 14. It is expected to be a sold-out event, so register soon!

After flying into Jacksonville Executive (Craig) Airport (KCRG) in Jacksonville, complimentary transportation will take attendees to the WGV. Shuttles will run 11 a.m. to 7 p.m. Tuesday, April 11 and 8:30 a.m. to 7 p.m. Wednesday, April 12. After the Gathering, complimentary transportation will be provided back to KCRG Saturday, April 15 from 7 to 11 a.m.

Special pricing on rooms is being offered for King Air Gathering attendees. To book your room online there is a link on the KAG website. If you'd rather make the reservations by telephone, call (904) 940-8000 and use code "KINGAIR" to receive the special rate.

Featured speakers at the King Air Gathering include:



Brian Shul, SLED Driver – Brian has a phenomenal comeback story from laying near dead in the jungle of Southeast

Asia during the Vietnam conflict to later flying the SR-71, the world's fastest, highest flying jet. After 20 years and 5,000 hours in fighter jets, he retired and went on to pursue his writing and photographic interests and has written five books, all aviation related.

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The World Golf Village in St. Augustine, Florida, is the location for the 2023 King Air Gathering.





Erik Eliel, Founder/President of Radar Training International – Erik will be presenting a KAG Radar Course which has been added Wednesday, April 12, for an extra fee. His seminars have been presented to professional pilots

representing the flight departments of Fortune 500 companies, aviation associations, a major airline and the military, as well as dispatchers and meteorologists of aviation-related companies. He has also been called on by manufacturers of airborne weather radar systems to consult in the design, operation and evaluation of their systems.



Dr. Quay Snyder, President/CEO of Aviation Medicine Advisory Service – Dr. Snyder holds board certification in aerospace medicine, addiction medicine, family practice and occupational medicine and provides medical certification and

aviation safety guidance for pilot and air traffic controller unions, as well as business and general aviation pilots. He is also very active in many aviation safety committees and organizations and is a Gold Seal CFI, a DPE and FAA Safety Team representative.



Tom Clements, Flight Review Inc. and King Air Expert – Tom has been flying and instructing in King Airs for over 50 years, starting at the Beechcraft factory. He is a Gold Seal CFI and has over 23,000 total hours, with more than 15,000 in King Airs and serves as the Director of Training for the King Air Academy. He is also author of "The King Air Book," "The King Air Book II" and the monthly "Ask the Expert" column in this magazine.



Dr. Scott Dennstaedt, Founder of Aviation Weather Workshops – Dr. Dennstaedt combined his meteorology training and love of aviation and created Aviation Weather Workshops to teach pilots at all experience levels how to

minimize their exposure to adverse weather. He also recently created EZWxBrief, a progressive web app, and co-authored the weather book "Pilot Weather: From solo to the airlines." He is a commercial pilot with instrument rating and has been a CFI for over 20 years.



Peter Basile, Senior Air Safety Investigator at Textron Aviation – Peter has participated as an NTSB party member on over 180 accident investigations ranging from the Cessna 140 and Beechcraft Musketeer to current production King

Airs and Citation business jets. He instructs at the DOT Transportation Safety institute and NTSB academy, as well as presents safety information to various pilot associations. He holds a Master of Science in aviation safety, is a private pilot with an instrument rating and an A&P mechanic with inspection authorization.



Dean Benedict, BeechMedic LLC – Dean is a certified A&P/IA with over 45 years of maintaining King Airs. He's the founder and former owner of Honest Air Inc., a maintenance shop that specialized in Beech aircraft with an emphasis on King

Airs. Currently, with BeechMedic LLC, Dean consults with King Air owners, operators and maintenance shops on all things pertaining to King Air maintenance. This includes troubleshooting, pre-buys and maintenance management. Dean also writes the "Maintenance Tip" articles for this magazine.

There will also be breakout sessions for operations and maintenance and avionics and engines, so attendees can get more specific information regarding their individual King Air models.

This year KAG will also feature a variety of activities for spouses/companions, so be sure to check out more details when you register.

More event information can be found at: www. kingairnation/gathering. You can also go to KingAirevents.com, where there is detailed instructions on how to register.

Don't miss the opportunity to join with other King Air owners and pilots while educating yourself about all things King Air. Make plans now to attend King Air Gathering 2023, April 12-14.





King Air Cabin Windows – Pane Management 2.0

by Dean Benedict



"Always leave the cabin windows in the non-polarized position whether parked inside or out. Doing so will prolong the life of the polarized panes immensely."

he polarized windows in a King Air were designed to block sunlight for passengers sitting on the sunny side of the cabin. They are the King Air's answer to that little sliding shade found on airliners and elsewhere, and they do the trick nicely, but with one major drawback: They are prone to burning out and turning brown.

King Air passenger window assemblies consist of three panes. The exterior pane is not part of the polarization system. The other two panes – a middle, stationary pane and the interior, rotating pane – produce the polarization effect which offers many gradations between clear and maximum darkness. Passengers can choose to control the glare and still see the view if they wish. However, when the inner pane is turned to the darkest position, heat is trapped between it and the stationary pane. This heat buildup burns out the panes.

On the Ramp or In the Hangar

I know it is common practice to turn all the rotating panes to the max dark position if your King Air has to stay parked outside for a few days. The idea is to keep the aircraft interior from becoming lava-hot while the aircraft is sitting outside in the blazing sun. Unfortunately, this is exactly what destroys those polarized panes.

For the last 45 years I have been telling King Air owners and pilots: *"Never* leave the polarized panes in the dark

position, even if parked inside the hangar! *Always* leave the cabin windows in the non-polarized position whether parked inside or out." Doing so will prolong the life of the polarized panes immensely.

Really damaged King Air panes not only look burned out but can look bubbled (delaminated) or even cracked! I can't tell you how many times an anxious owner or pilot has called me about a cracked window, only to find after closer inspection (and me telling them what to look for) that the problem was with the stationary pane of the polarizing set, and not the exterior aircraft window.

Pane Remedies

Back when I had my shop, I always squawked a burnedout pane if I found one, but in my discussion with the customer I would suggest they wait until several windows need replacement before addressing the issue. It's not an airworthy item.

Most aircraft owners shudder at the prospect of window replacement. It is a labor-intensive project in addition to the cost of parts. In 2011, when I first wrote about King Air cabin windows, a set of polarized panes for a King Air (the fixed, middle pane and the rotating interior pane for one window) ran about \$600. Today it's more than double that. A King Air 200 has 11 windows, including the window over the potty. If you figure in one-to-two hours of labor per window ... you get the idea.

One way to save a little bit of money on pane replacement is to change only the middle, stationary pane. Rarely, if ever, have I seen the interior rotating pane go bad. The source of burn out is the middle pane. Your rotating panes can get scratched by exuberant children or wayward ski poles, but if they are not scratched too badly, why not keep them and just have the middle panes changed? The labor is the same, but this way you can reduce the cost of parts by up to half and still fix the unsightly burn out.

I am pleased to report that the company providing PMA polarizing panes for King Air windows is still going strong. I chatted with them recently. In these inflationary times, they are about to review their pricing for 2023, but even so, it's probably a better deal than ordering from the factory.

Changing Panes – A Painstaking Job

Changing windowpanes on an aircraft requires great attention to detail. If the slightest amount of dust or lint is left on the new stationary pane, it will show up like fluorescent dandruff when the rotating pane is turned to max polarization. If this happens, the new pane must be removed and cleaned carefully, then reinstalled.

(Continued on page 20)



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Changing windowpanes on an aircraft requires great attention to detail. If there is a reveal – a separate, flat frame around a window, like those shown above – the labor time for replacing the windowpane runs one to two hours.





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Back in the day, I could change out the windowpanes in a King Air in one to 1½ hours per window, providing the King Air had the older style interior configuration. By this I mean that each window is surrounded by a separate reveal that looks like a flat frame around the window. If the interior configuration does not have these reveals, then all bets are off on labor projections.

If money is no object, consider switching from the polarizing windows all together. There are retrofit options out there with pleated shades, and so forth. But they come with a cost, and they have their share of drawbacks as well.

Aesthetics Versus Practicality

Modern aircraft interiors often have one-piece sidewalls. They give a sleek and seamless look which lends a feeling of spaciousness to a relatively small space. Unfortunately, to gain access to the windows for replacement, the one-piece sidewall has to come out, and this is difficult and time consuming. It is best done after all the seats have been removed.

Mechanics need access for inspections, which is something to think about if a new interior is in your future. The Phase 3 inspection checklist mainly consists of cabin items and requires removal of all the seats. Scheduling window replacement or other interior projects concurrent with a Phase 3 helps the shop to be more efficient.

The 2,500-cycle cabin inspection requires removal of the entire interior – headliner, sidewalls, seats, carpet – everything comes out. Here is another opportunity to schedule an interior project. Conversely, if your King Air is going in for an interior refresh or replace, you might consider having that cabin inspection done at the same time, even if you are 500 cycles early. From a maintenance perspective it makes a lot of sense.

For me, the King Air is a magnificent aircraft, both in performance and appearance. Enhance the look of your King Air by protecting your windows from burnout; and consider replacing burned out panes when the budget allows.

Dean Benedict is a certified A&P/IA with over 45 years of maintaining King Airs. He's the founder and former owner of Honest Air Inc., a maintenance shop that specialized in Beech aircraft with an emphasis on King Airs. Currently, with BeechMedic LLC, Dean consults with King Air owners, operators and maintenance shops on all things pertaining to King Air maintenance. This includes troubleshooting, pre-buys and maintenance management. He can be reached at *dr.dean@ beechmedic.com* or 702-524-4378.



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Lever Lock Switches ... and a Few That Look Like They Are, But Aren't

by Tom Clements

hen I taught King Air ground school at Beech Aircraft Corporation back in the 1970s a name we used often was "lever lock switch." In preparation for this article, I went to my dictionary to see if this word actually existed and was not too surprised to find that it did not. Instead, what I found was "toggle switch" and "locking lever." The definition of toggle switch found is: "An electric switch with a spring to open or close the circuit when a projecting lever is pushed through a small arc." The "locking lever" addition means that the lever cannot be moved until it is unlocked and this means that it must be pulled before it can be moved up or down or left or right. For the purposes of this article I think I will revert to the old familiar "lever lock switch" that I presume is familiar to most of my readers.

Perhaps the most common example of this type of switch in almost all King Airs is the left or right bleed air switch. If the copilot were to brush his hand against this switch accidentally as he reached for an iPad, there'd be no chance for a sudden loss of bleed air since no matter how hard he hit the switch it would not move if he had not first pulled it toward him, typically using the combination of his or her forefinger and thumb.

As years have passed, more lever lock switches appeared in King Air cockpits. The first three 90-models – 65-90, A90, and B90 – had none. Bleed air lever lock switches made their appearance on the 100 model when it premiered in 1969. But not until the appearance of the 200 model in 1974 did more lever lock switches join the cockpit controls. There is an interesting story about what prompted the appearance of two of them: the left and right "ignition" and "engine start" switches.

As you likely know, the model 200 incorporated many, many changes and improvements over its predecessors. One of these changes was the relocation of the parking brake's control knob from its previous spot (the highest left corner of the pilot's left subpanel) to the new one that was now the farthest left portion just below the left subpanel, where the pilot's air valve knob previously resided. Not too surprisingly, some 200s in the first few years blew all four tires on landing. It was obvious to see why: The pilot *thought* he was shutting off the conditioned air flowing down toward his feet but what he *actually* accomplished was pulling on the parking brake: mistake!

Another change was relocating the pilot's air valve knob to the left and slightly below where the pilot's control wheel's shaft exits from the subpanel and also changing how the knob functioned. Now the air flowing



King Air 350 pilot's left subpanel

towards the pilot's feet turned "on" when the valve was pulled and was shut "off" when pushed ... a much more logical choice, in my opinion, than the original "backwards" design.

While the pilot's left subpanel was undergoing these changes, why not throw in a few more? First, the designers needed to add switches for the ice vanes. Previously, they were moved solely by mechanical pushpull T-handles centered beneath the pilot's subpanel. But now the primary actuation method was via an electric motor and the T-handles reverted to a back-up system only used if the primary system malfunctioned. The other switches on the pilot's left subpanel got slightly rearranged and one of these changes saw the ignition and engine start switches being moved down close to the very bottom edge of the panel.

Bud Francis, the 200's lead test pilot head, was a rather tall gentleman and one time his left knee accidently pushed both left and right start switches up to the "ignition" and "start" position as he adjusted his seat. When the battery switch came on, all onboard were quite surprised when both engines began turning! Oops! The outcome of this incident was what we now see in almost all King Airs: The upward travel of the "ignition" and "engine start" switch is the lever lock type. It must be pulled before it can be moved up ... impossible for a knee alone to do so!

To make it easy to pull, all lever lock switches in King Airs contain an obvious "blob" on the end of the lever that the thumb and forefinger can easily grasp. This blob or bulge makes the switches that require the pull, easy to recognize.

The bottom portion of this same, three-position switch – **Ignition and Engine Start** at the top, **Off** in the center and **Starter Only** at the bottom – does not require a pull. It does not have the locking action. From the bottom position it will spring back to the center position when released. Typically this switch would never be used in the bottom position for more than 30 seconds during an engine clearing procedure following a no light off scenario so it would be easy to keep pressing it down for that short length of time.

Quiz time: What other cockpit switch is the lever lock type – with the blob on the end of the lever – but only

needs to be unlocked to move in the up or down position, not for both?

The answer: windshield heat. I will wager that over 50% of King Air pilots don't know this unusual fact. Back in the pre-C90A days – before 1984 – only the 200-series and the 300-series had separate switches for pilot and copilot windshield heat. The other models, instead, used only one switch and one windshield temperature regulation system to control both sides. Also, the heating element was a horizontal portion that covered only about one-third of the windshield, starting downward from near the center.

There were no "Normal" or "High" heat choices like the newer models have. The switch, however, still had three positions: "**Both**" at the top, "**Off**" in the center and "**Pilot Only**" at the bottom. This was a simple, three-position toggle with no locking action, no need to pull. About the only time the "Pilot Only" bottom position would be used was in the event of a generator failure.

The newer windshields *very* seldom require the use of high heat. Keep in mind – as you pilots of these models should already know – the windshield temperature that the thermostat circuit is trying to maintain does not increase when "High" is selected. Instead, the heat is concentrated in a smaller area. The innermost five inches or so of both windshields, closest to the center post, receive no heat so that the available energy is concentrated more directly in each pilot's line-of-sight.

The only time either the pilot or copilot windshield heat switch must be pulled is to move it to the seldom-used high heat position! Stop pulling that switch every time you grasp it! There's no need to do that! By doing so, you make it much more likely that you will accidentally move it down to the "High" position when you meant



to just turn the "Normal" heat off. Use only your index finger on that switch and reserve the thumb/index combination for the rare times you truly want high heat. Realize that if high heat is accidentally on during engine starting, the chance of blowing a current limiter in a model 200 is greatly increased.

Another switch that started as a simple toggle but then became a lever lock in later years is the inverter selector switch. (Which now has been removed as the new airplanes no longer require alternating current.) This switch, again on the pilot's left subpanel, has always been located next to the "Avionics Master" switch and the inverter switch, before it was changed to the lever lock type and had the exact same appearance as the avionics master switch ... a simple toggle. I have watched many a trainee deal with the failure of the No. 1 inverter I gave them by turning off the avionics! Oops! They hastily grabbed the wrong switch! Changing to the lever lock type makes this error highly unlikely.

The optional brake deice system's control switch is also a standard, two-position lever lock type that must be pulled to activate or deactivate. Although located on the pilot's right subpanel along with eight or so other anti-ice and de-ice switches, the chance of activating it unintentionally while turning on the other items is nearly impossible.

The most important takeaway from this article? Stop pulling the windshield heat switches ... except when you actually want to select high heat!

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*. 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*.



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Thunder Birds – The Mighty Beechcraft A17 Biplanes

The Model A17F and A17FS were like no other Beechcrafts ever built – powerful, brutish machines whose high performance was nothing short of spectacular for their time.

by Edward H. Phillips

Walter Beech and Ted Wells believed that an airplane's strongest asset was its speed, and the bullish A17F had speed in spades. Capable of more than 220 mph, in its day it was a flying machine of the highest caliber. Sold to the Goodall-Worsted company in 1934, the ship was later owned by Howard Hughes but in 1942 met its fate in a hangar fire. (University Archives and Special Collections, Wichita State University Libraries) espite America's bleak economic situation, Walter Beech and his chief engineer, Ted Wells, held tenaciously to the belief that there was a small, but profitable market for a single-engine, high-performance, business aircraft. In 1932, the first Model 17R had proven that such an airplane could be built, but would it sell? Time would tell. Undaunted, Beech also offered the Model 17 airframe mated to a Wright "Cyclone" aircooled radial engine and dubbed the combination the A17F.

As 1933 drew to a close Walter Beech and his infant airplane company had sold one airplane – the second Model 17R built – and had orders in hand for two additional aircraft. Unlike the first Beechcraft, however, these two machines were to be powered by fire-breathing, ninecylinder Wright Cyclone radial engines. The first ship built, the Model A17F, mounted an R-1820F11 rated at 690 hp; the second, the A17FS, was equipped with a supercharged SR-1820F3 engine that produced an earth-shaking 710 hp.

Advertisements for the powerful Beechcraft had caught the attention of a company in New England. The first A17F was ordered by the Goodall-Worsted/Sanford Mills company to fly corporate officers to its various clothing factories operating in several states. The second ship had been ordered and was designed specifically to compete in the MacRobertson International Trophy Race scheduled for 1934. The grueling, 12,000-mile route would begin at London and end at Melbourne, Australia.

Beech Aircraft Company completed the A17F in May 1934. It was the ultimate single-engine, four-place business airplane of the mid-1930s and could attain a maximum speed approaching 220 mph – a speed that placed it in the same class with only a few military or commercial airplanes of the day. To feed the thirsty Cyclone powerplant the A17F's fuel tanks held 155 gallons; the A17FS would hold even more.

The aircraft was delivered to Goodall-Worsted pilot Robert Fogg May 27. The airplane's interior was plush, luxuriously outfitted with Goodall-Worsted velour and



mohair fabrics made by Sanford Mills especially for the Beechcraft. As a final custom touch, the company had the Beech factory paint the words "Tailored By Goodall From the Genuine Cloth" on both sides of the aft fuselage. Priced at \$24,500, the bullish biplane was resplendent in its glossy black and red paint scheme trimmed in cream to match the interior. As the A17F departed that day from the old Travel Air field in East Wichita, Fogg knew he was flying one of the world's fastest biplanes, and speed was its most salient characteristic.

As he flew eastward to the company's headquarters in New England, the big Beechcraft drew attention wherever it landed for fuel. After arriving in Boston late that day, Fogg wired Walter Beech expressing his admiration for the mighty A17F, "Breakfast in Wichita, dinner in Boston and headwinds all the way. Congratulations on your latest masterpiece – the world's finest aircraft. Progress demands creation rather than imitation, and you have achieved it again." Despite Fogg's praise for the speedy ship, after only one year in reliable service to the company, the vagaries of an economic depression forced Goodall-Worsted to sell the A17F to the Hughes Tool Company.

The ship was later bought by race pilot Robert Perlick and prepared for competition in the 1937 Bendix Trophy

race. Unfortunately, during the takeoff roll the heavy weight of fuel caused the landing gear to collapse and Perlick was out of the race. He tried again in 1938 and was poised to win the event when the Cyclone engine went silent due to fuel starvation. To add insult to injury, in 1944 the Beechcraft met its end in a hangar fire.

As for the A17F's more powerful brother, the A17FS, its career was short-lived and uneventful. The airplane was completed too late to enter the MacRobertson race. The many promises of support and money made by Wichita business owners and other people were not forthcoming and the situation was further compounded by the high cost of shipping the biplane to England.

Louise Thaden, who was chosen to pilot the A17FS on its epic journey, estimated the cost of logistics to support the ship during the race would be at least \$8,000, including the cost of shipping the disassembled Beechcraft to London. Further costs would be incurred to reassemble, fly the airplane and prepare it for a journey that promised to be fraught with more than its share of risks.

With his hopes of racing glory dashed to the ground, Walter Beech suddenly had an expensive "hangar queen" on his hands to the tune of about \$25,000, money his infant airplane company was desperate to recover as



Beech Aircraft Company built the muscular A17FS to compete in the 1934 MacRobertson race from London, England, to Melbourne, Australia, but it was withdrawn when financing failed to materialize. Powered by a 710 hp Wright Cyclone radial engine, the bullish Beechcraft served briefly with the U.S. Department of Commerce before it was bought back by Walter Beech and disappeared from the aviation scene.

(University Archives and Special Collections, Wichita State University Libraries)

quickly as possible. Undeterred, Beech began a vigorous campaign to sell the orphaned airplane. As the weeks passed, Walter grew increasingly irritated. Despite his best sales efforts, no serious buyers stepped forward to acquire the massive A17FS. In 1935, however, Walter finally found a willing and able buyer – the United States government's Bureau of Air Commerce. The agency planned to have its aviation inspectors fly the airplane on inspection tours around the country.

After a series of modifications demanded by the Bureau were completed, the Beech Aircraft Company finally delivered the aircraft in July 1935. The Bureau's pilots were awed by the ship's power and speed, but those virtues also led to frequent repairs to the welded steel tubing that suffered from vibrations and cracking. In addition, the Wright Cyclone gulped fuel at an alarming rate that soon began to put a dent in the agency's aviation budget.

The Bureau continued to operate its unique but controversial airplane for about one year before its high operating and maintenance costs could no longer be ignored. Despite the airplane's drawbacks, Bureau officials initially decided to retain the Beechcraft. They eventually changed their minds, and in June the A17FS was flown to Cincinnati, Ohio, and relegated to a dark corner of a hangar to await its fate. These issues, coupled with the availability of new, more modern and fuelefficient airplanes, led the Bureau to strike the A17FS from its fleet inventory in August 1936. Although the reason remains unclear nearly 80 years later, Walter Beech bought back the ship from the Bureau and in August it was retrieved from the hangar and shipped to the Wichita factory. Its exact fate remains a mystery, although rumors persisted for years that Walter eventually resold the airplane to a buyer in California. Another possibility is that Beech had the aircraft dismantled and destroyed to prevent further use.

It is undeniable, however, that the A17F and A17FS were unique airplanes, the "sui generis" of their time. Not only were they the most powerful Beechcrafts built until the advent of World War II, but more significantly they were created as hand-crafted flying machines fabricated during the "Golden Age of Aviation." Yet, Walter Beech's "Thunder Birds" with their bellowing Cyclone radials will never be forgotten. They appeared on the aviation scene only briefly, but unlike any Beechcraft before or after them, they made a lasting impression on those pilots fortunate enough to experience the sheer thrill of flying airplanes that had no equal.

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.



IS&S ThrustSense[®] Autothrottle adds STC for King Air G1000 flight decks

Earlier this year, Innovative Solutions & Support (IS&S) announced it had received Federal Aviation Administration (FAA) Supplemental Type Certification (STC) for its ThrustSense® Autothrottle to be installed on Beechcraft King Air 200 and 300 aircraft equipped with G1000 and NXi flight decks. This accreditation allows ThrustSense to be installed on all certified glass cockpit systems for the King Air.

The IS&S ThrustSense Autothrottle is a full regime system from takeoff roll to landing phases of flight, including go-around. ThrustSense's FADEC-like engine protection prevents both engine and airspeed exceedances by automatically controlling engine output by computing and adjusting to the exact appropriate power levels, thus significantly reducing pilot workload. ThrustSense provides protection against Vmca – the minimum speed while in the air – via the first ever system (LifeGuard[™]) that proportionally reduces engine power to maintain directional control. ThrustSense is globally certified in 40 different countries and on more than 19 different aircraft configurations, including over 200 Beechcraft King Air turboprops.

"We're seeing continued acceptance and growth of ThrustSense's safety and performance by King Air operators throughout the world," said Tom Grunbeck, IS&S Director of Autothrottle Programs. "With the aircraft's broad range of mission capabilities, many aircraft operators are focused on further enhancing the King Air's utility and value by reducing crew workload in their flight operations. ThrustSense is a great example of IS&S's capabilities as a key player in providing technology to deliver next-level cockpit automation."

ThrustSense is the first and only certified autothrottle for Beechcraft King Air B200 and B300 aircraft and is standard equipment on the King Air 260 and 360 production models. It is available for retrofit at authorized IS&S King Air Service centers worldwide.



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-Henry Maier, President and CEO, FedEx Ground

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Factory Direct Models 14	Trac
Ice Shield/SMR Technologies27	

Kadex Aero Supply LTD 32
King Air Academy8
King Air Nation4
Luma Technologies7
More Company 18
Pilots N Paws18
Prime Turbines10
Raisbeck Engineering25
Select Airparts4
Trace Aviation21



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