King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

JANUARY 2016 • VOLUME 10, NUMBER 1 • $4.50

Flying the Frigid Skies

A Review of the FAA's New Cold Temp Rules

King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

JANUARY 2016 Volume 10 / Number 1

EDITOR
Kim Blonigen

EDITORIAL OFFICE
2779 Aero Park Dr.,
Traverse City MI 49686
Phone: (316) 652-9495
E-mail: kblonigen@cox.net

PUBLISHERS
J. Scott Lizenby
Dave Moore
Village Publications

GRAPHIC DESIGN
Luana Dueweke

PRODUCTION MANAGER
Mike Revard

PUBLICATIONS DIRECTOR
Jason Smith

ADVERTISING DIRECTOR
John Shoemaker
King Air Magazine
2779 Aero Park Drive
Traverse City, MI 49686
Phone: 1-800-773-7798
Fax: (231) 946-9588
E-mail: johns@villagepress.com

ADVERTISING EXECUTIVE ASSISTANT
Betsy Beaudoin
Phone: 1-800-773-7798
E-mail: betsybeaudoin@villagepress.com

SUBSCRIBER SERVICES
Rhonda Kelly, Mgr.
Diane Chauvin
Molly Costilow
P.O. Box 1810
Traverse City, MI 49685
1-800-447-7367

ONLINE ADDRESS
www.kingairmagazine.com

SUBSCRIPTIONS
King Air is distributed at no charge to all registered owners of King Air aircraft. The mailing list is updated bi-monthly. All others may subscribe by writing to: King Air, P.O. Box 1810, Traverse City, MI 49685, or by calling 1-800-447-7367. Rates for one year, 12 issues: United States $15.00, Canada $24.00 (U.S. funds), all other foreign $52.00 (U.S. funds). Single copies: United States $4.50, Canada/Foreign $6.50.

COVER PHOTO
Photo courtesy of
Elliott Aviation

Contents

King Air (ISSN 1938-9361), USPS 16694 is published monthly by Village Press, Inc., 2779 Aero Park Drive, Traverse City, Michigan 49686. Periodicals Postage Paid at Traverse City, MI. POSTMASTER: Send address changes to King Air, Village Press Inc., P.O. Box 1810, Traverse City, MI 49685. Telephone (231) 946-3712. Printed in the United States of America.

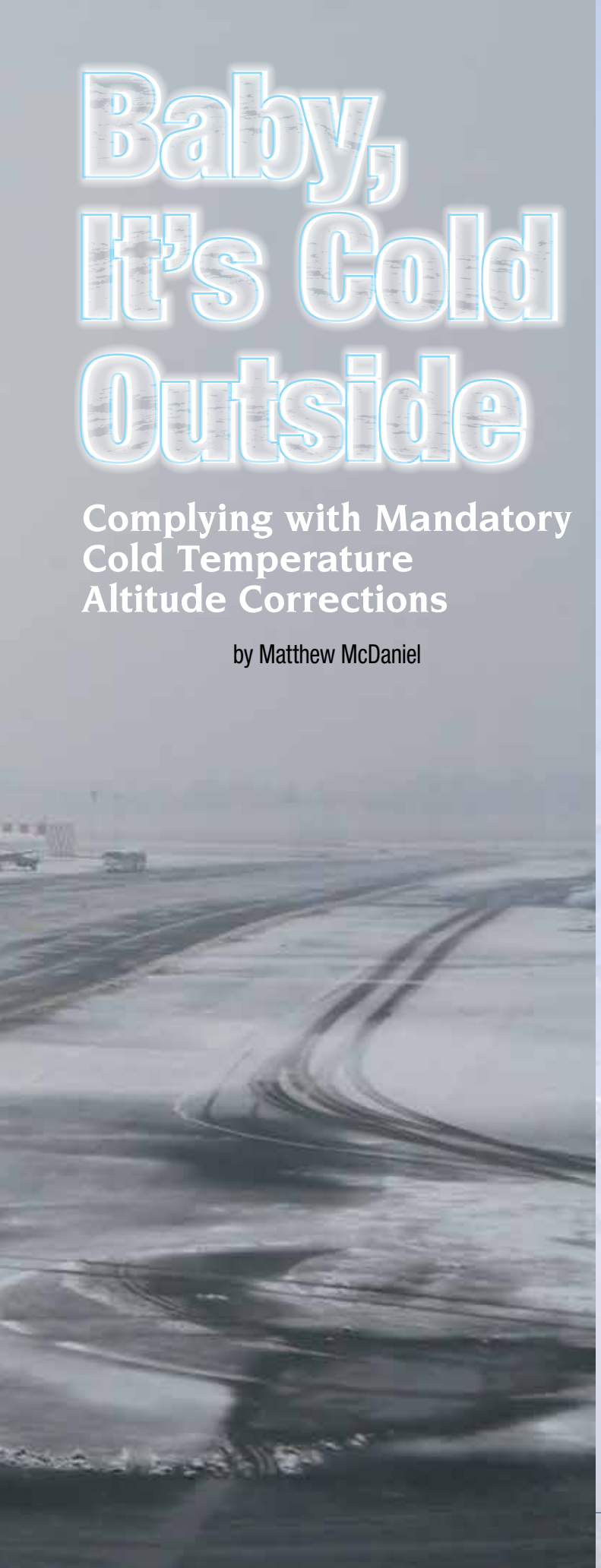
ADVERTISING: Advertising in *King Air* does not necessarily imply endorsement. Queries, questions, and requests for media kits should be directed to the Advertising Director, King Air, P.O. Box 1810, Traverse City, Michigan 49685. Telephone 1-800-773-7798.

MANUSCRIPTS: *King Air* assumes no responsibility for unsolicited manuscripts, photographs, or art work. While unsolicited submissions are welcome, it is best to query first and ask for our Writer's Guidelines. All unassigned submissions must be accompanied by return postage. Address queries and requests for Writer's Guidelines to the editor.

Baby, It's Cold Outside

Complying with Mandatory Cold Temperature Altitude Corrections

by Matthew McDaniel



The alarm jolts me awake at 4:30 a.m. and I fumble in the dark to stifle its intrusive wailing. Dreading the scene, I stumble to the hotel room window, pull the curtains, and confirm the accuracy of last night's forecast. Fresh snow blankets everything outside and gently falling snowflakes fill the beam of every street light. De-icing the aircraft is inevitable for this morning's 7:00 a.m. departure, but I know we'll still be going, and it's time to get a move on. Winter has arrived in Chicago and few airports are more adept at dealing with it than O'Hare International. Are you equally prepared for Old Man Winter and the FAA's new rules for dealing with him?

Flight Below Zero

Pilots who dare to venture into frigid skies, whether rarely or routinely, quickly learn that below freezing operations offer a unique set of challenges. Most cold weather precautions are common knowledge – pre-heating engines and avionics, respecting aircraft temperature limitations (upper and lower), inflight icing dangers, runway contamination and survival gear considerations, just to name a few. But, a far lesser known danger is cold weather induced instrumentation error. Extreme cold temperatures create significant altimetry errors, causing indicated altitude to read higher than actual altitude. In cruise flight, such errors are not a factor since all nearby aircraft should be experiencing the same level of error, eliminating any altitude separation concerns. However, left uncorrected, such errors can put an aircraft well below published minimum altitudes during Instrument Approach Procedures (IAP). During cold weather IAPs, barometric altimeters can leave pilots with a false sense of security by indicating they are at or above the applicable minimum altitude when, in reality, the aircraft is dangerously close to the ground or obstructions. As temperatures drop, safety margins begin to shrink. Eventually, the Required Obstacle Clearance (ROC) limits built into every IAP segment can be exceeded and altitude safety margins become razor thin or disappear altogether. Airports lying within mountainous terrain are particularly at risk, but since obstacle (not just terrain) clearance is a factor, even "flatland" airports can be affected.

Telluride, Colorado runway

Risk Assessment and Mandatory Compliance

Various influential aviation groups and safety organizations expressed concerns over altimetry errors in extreme cold temperature situations and the resulting erosion of ROC safety margins. In response, the FAA did a comprehensive assessment to determine if IAPs created and certified under FAR Part 97 were at risk. Part 97 IAPs are those within the U.S. National Airspace System and all comply with strict ROC limits. By using the coldest recorded temperatures over the last five years for each airport, the FAA investigated the probability and severity of altimetry errors during such extreme non-standard temperature operations. It was decided that airports with a one percent or greater probability of having temperature-induced ROC exceedances would have cold weather restrictions applied to any compromised approach segments. The result was more comprehensive guidance for pilots within both the Aeronautic Information Manual (AIM) and Notices to Airmen Publications (NTAP). Additionally, a list of specific Cold Temperature Restricted Airports (CTRA), where altitude corrections were recommended, was published in December 2014. The FAA deemed such corrections mandatory, effective September 17, 2015. The initial CTRA list included 272 individual airports in 30 states! Each IAP at CTRAs may be affected differently, in that the temperature thresholds may vary and mandatory corrections may apply to intermediate, final, and/or missed approach segments of individual IAPs. Airports may be added or removed from the CTRA list as assessments are expanded and revised. Such changes will be reflected in subsequent NTAP revisions.

Corrective information for extreme cold weather airports is nothing new. Correction tables and equations have been available from a variety of sources for years, but until recently, such information had been just that – *informational.* Additionally, pilots had to really want to educate themselves on such topics, as gathering the information could be a bit of a scavenger hunt. With the new rules ***requiring*** pilots to calculate and apply altitude corrections when operating at designated CTRAs, the

Cold Temperature Restricted Airport altitude correction example:

Approach: ILS or LOC 18 into LaCrosse, WI (KLSE) [Figure 1].

Temperature Threshold: Altitude correction required at/below -19°C/-2°F (note snowflake and temp notation on Figure 1).

Segments to be Corrected: While the original NTAP indicates which segment altitude(s) require correction, the IAP chart and A/FD do not. If you are unsure which segments are affected, applying correction to each segment to be flown is necessary to ensure compliance.

Interpolating: Interpolation of the ICAO Cold Temperature Error Table [Figure 2] is discouraged to prevent errors that might result in insufficient correction being applied. It is best to round to the next step (in the conservative direction) on the Error Table. Step to the next higher altitude difference and the next lower temperature. This will ensure you will always be at (or above) the required corrected altitude(s).

Assumed Current Temperature for this example: -25°C (-13°F).

Airport Elevation: 656 feet MSL

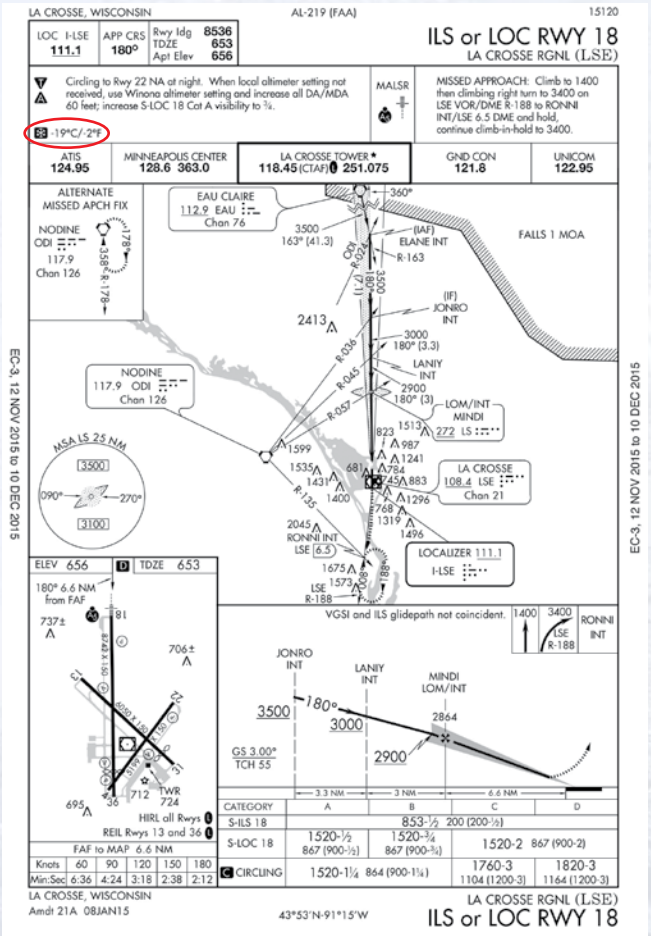


Figure 1: An example of the new notation on the Terminal Procedures Charts (Approach Plates) of all CTRAs – a white snowflake symbol over a black background.

TBL 7-2-3

ICAO Cold Temperature Error Table

Height Above Airport in Feet

Reported Temp °C	200	300	400	500	600	700	800	900	1000	1500	2000	3000	4000	5000
+10	10	10	10	10	20	20	20	20	20	30	40	60	80	90
0	20	20	30	30	40	40	50	50	60	90	120	170	230	280
-10	20	30	40	50	60	70	80	90	100	150	200	290	390	490
-20	30	50	60	70	90	100	120	130	140	210	280	420	570	710
-30	40	60	80	100	120	140	150	170	190	280	380	570	760	950
-40	50	80	100	120	150	170	190	220	240	360	480	720	970	1210
-50	60	90	120	150	180	210	240	270	300	450	590	890	1190	1500

EXAMPLE-

Temperature is -10 degrees Celsius, and the aircraft altitude is 1,000 feet above the airport elevation. The chart shows that the reported current altimeter setting may place the aircraft as much as 100 feet below the altitude indicated by the altimeter.

Figure 2: The ICAO Cold Temperature Error Table.

Assumed Flight Condition: Assume you are being radar vectored to intercept the inbound course between LANIY and MINDI intersections [Figure 1].

Correction Process: This intermediate segment's published minimum altitude is 2,900 feet MSL; 2,900 – 656 = 2,244 feet difference. So, enter the ICAO Cold Temperature Error Table at 3,000 feet (rounding to the conservative side). Drop down to the -30°C Reported Temperature line (again, rounding to the conservative side). Read the required correction of 570 feet. So, the new minimum altitude to be flown between LANIY and MINDI would be 2,900 + 570 = 3,470 feet MSL. Advise ATC you'd like to maintain 3,500 feet for cold temperature correction (rounding up to nearest 100 feet). Note, in this example, that may require intercepting the localizer further from MINDI (possibly even outside of LANIY) to ensure interception of the glideslope from below (which may also necessitate such a request of ATC).

Decision Altitude (DA) is published as 853 feet MSL. This is 197 feet above airport elevation and 200 feet above touchdown zone elevation. While airport elevation is the official reference, I would choose the higher of the two, to be conservative, as many touchdown zone elevations are higher than the average airport elevation. So, using 200 feet at -25°C (-30°C on Error Table) requires a 40-foot correction. Corrected DA is 893 feet MSL. Corrected DAs or MDAs need not be reported to ATC, as vertical traffic separation is not a factor at those altitudes and only the pilot can determine if in-flight visibility and appropriate visual references exist to allow continuation below corrected MDA/DA (refer to FAR 91.175).

The published Missed Approach Procedure (MAP) requires a climb to 1,400 feet MSL before turning and a final level-off altitude of 3,400 feet MSL; 1,400 – 656 = 744 feet (round to 800 feet on Error Table). Required correction is 150 feet. Thus, corrected initial climb altitude on the MAP should be 1,550 (round up to 1,600) feet MSL; 3,400 – 656 = 2,744 feet (round to 3,000 feet on Error Table). Required correction is 570 feet. Thus, corrected final MAP altitude is 3,970 (round up to 4,000) feet MSL. In the event of a missed approach (without ATC amendment), advise ATC you need to climb to at least 4,000 feet MSL for cold temperature altitude correction.

FAA has made the information not only readily available, but revisable, via AIM Chapter 7 and NTAP.

Compliance: Where, When, and How

Where: The initial list of FAA CTRAs issued in the December 2014 NTAP, was updated September 17, 2015. The NTAP is updated every 28 days and can be found within the *www.faa.gov* website. Space does not permit listing those airports here, but suffice it to say that while the majority are in northern states, many exist in locations one might not associate with extreme cold weather (California, Kansas and Tennessee, for instance). Wisely, the FAA chose to put a new notation on the Terminal Procedures Charts (Approach Plates) of all CTRAs; a white snowflake symbol over a black background [Figure 1]. The snowflakes began appearing on Approach Plates in the March 5, 2015 revision cycle and their implementation is an ongoing project, however, many current CTRA approach plates are still awaiting this addition. So, for now, check the NTAP and/or the Airport Remarks section of the Airport/Facility Directory (A/FD) to determine if your destination is on the CTRA list (and, if so, what temperature threshold applies).

When: Adjacent to the new snowflake symbol is the temperature where altitude corrections become mandatory. If multiple threshold temperatures apply at the same airport, the warmest one is published on all approach plates. When conducting that IAP, at or below the depicted temperature, pilots must make altitude corrections per the current NTAP. In lieu of knowing which specific segment(s) require correction (per the NTAP), pilots should correct all minimum altitudes on the IAP (i.e., err on the safe side, and fly corrected minimums for all segments of the IAP).

How: If there is not already, I'm sure there will soon be "an app for that!" However, unless that app is FAA approved (unlikely), pilots will have to make their altitude corrections via the FAA-approved "ICAO Cold Temperature Error Table" (AIM Table 7-2-3) [Figure 2]. This table is simple enough to use, but it does require familiarization and a bit of cross-referencing from the pilot. Most important, the reference numbers across the top are neither MSL, nor AGL altitudes. Rather, they are Height Above Airport (HAA) in feet. Thus, pilots need to cross-reference the official airport elevation (from any approved source) with the segment minimum altitude on the approach plate and calculate the difference. From there, drop down to the line corresponding to the current temperature to determine the required altitude correction. The sum of the correction factor and the minimum published altitude is the corrected altitude to be flown for the given segment, the Minimum Descent Altitude (MDA), the Decision Altitude (DA), and/or the missed approach altitude(s). Another way to think about the correction factor is that it is the number of feet below the indicated altitude the aircraft will be if flying uncorrected altitudes.

Playing Well with Others

ATC should be advised anytime an adjusted altitude is to be flown (other than MDA/DA altitudes). This ensures ATC knows when you've leveled off and what altitude you'll be maintaining, allowing known traffic to be safely separated. If being radar vectored, flying ATC-assigned altitudes, or flying an ATC-revised missed approach, pilots should fly the assigned altitudes (uncorrected). If being vectored to intercept an intermediate segment below the corrected minimum altitude, pilots should query ATC, asking to maintain the corrected minimum altitude (or above) for that segment. When flying IAPs into uncontrolled fields, self-announcements should include the corrected altitude being maintained. Pilots should keep their altimeters set to the local barometric pressure and ***not*** attempt to make altitude corrections by adjusting altimeter settings, in order to ensure ATC's ability to guarantee vertical separation minimums between aircraft. [See sidebar for a CTRA IAP example, with corrections applied.]

King Air Avionics and Cold Weather Altitude Corrections

As you might expect, the variety of avionics packages available in decades of King Air production and via retrofit is extensive, to say the least. It would be impossible to list how each package deals with cold temperature correction. What can be said is that very few current King Airs have any sort of self-compensating cold temperature correction built into their avionics systems. Some of the newest glass-cockpit packages do have the capability of applying internally calculated temperature-based altitude corrections to IAP segment altitudes and/or MDA/DA minimum altitudes. However, even those systems require the pilot to input the airport's current reported temperature into the system first. Advanced avionics manufacturers, such as Garmin with their various G1000-based

systems, are incorporating this capability into their systems via upgraded software versions. If you think your system might have such capabilities, check your software revision numbers and operating manuals to learn what, if any, such capabilities are available and how to utilize them appropriately. Chances are good you either don't have such capability in your aircraft or, if you do, a software upgrade will be required to ensure it is safe and legal to use under the current regulations. In some advanced avionics packages, the Autopilot and Vertical Navigation (VNAV) systems can even respect temperature corrected altitudes with proper pilot programming. But, for the vast majority of King Air operators, manual cold temperature altitude corrections are required.

Baro-VNAV systems used for LNAV/VNAV approaches usually have temperature limitations, as well (for both extreme cold and hot temperatures). However, Baro-VNAV temperature limits and CTRA temperature limits are mutually exclusive and should not be confused for one another. Baro-VNAV systems come in temperature compensated and non-temperature compensated varieties and each have their own set of limitations and operating rules. These have nothing to do with the CTRA list and the mandatory cold temperature altitude corrections at those airports. Thus, they are not within the scope of this article.

Expanding Your Knowledge

This article just scratches the surface, in order to make you aware of this important topic and the related regulatory change. Much more information is available in the following sources, including several detailed examples, using actual CTRA Approaches.

- Current AIM: Chapter 7, Section 2-3 (including Table 7-2-3).
- NOTAM 4-GEN-14 "Cold Temperature Restricted Airports" and subsequent revisions and updates via Notices to Airmen Publications (NTAP). Available within *www.faa.gov*.
- USDoT/FAA Information for Operators (InFO) Letter #15002, Dated: 9/14/2015.
- The National Business Aircraft Association (NBAA) has published several short articles on this topic, under the Aircraft Operations header, at *www.nbaa.org*.
- Numerous excellent internet articles exist, from basic announcements to very detailed articles with examples, mathematical formulas, and rules of thumb. These can be found via internet searches. However, be careful to verify such information via FAA-approved sources. KA

Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI & IGI. In 25 years of flying, he has logged over 15,000 hours total, over 5,500 hours of instruction-given, and over 2,500 hours in the King Air and BE-1900. 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 also flies the Airbus A-320 series for an international airline and holds six turbine aircraft type-ratings. Matt is one of less than 25 instructors in the world to have earned the "Master Certified Flight Instructor" designation for seven consecutive two-year terms. Mr. McDaniel can be contacted at (414) 339-4990 or *matt@progaviation.com*.

"For our aircraft, we were faced with the decision to continue costly recurring avionics maintenance or to upgrade. When we compared all of the numbers, the Garmin G1000 made the most financial sense. Elliott Aviation provided the best customer service for our King Air 350 Garmin G1000 upgrade. Not only are they experienced in Garmin G1000 retrofits, their attention to detail was second to none. At Elliott, they understand the importance of my time by offering a 15-day guaranteed downtime. My experience was incredible, and I was impressed with the exceptional service Elliott provided."

KEITH PERRY
Chief Pilot for Lamarque Motor Co.,
Kenner, Louisiana

INCREDIBLE CUSTOMERS DESERVE EXCEPTIONAL CUSTOMER SERVICE.

For nearly eight decades, we've thrived on customer feedback from around the world. With full paint, interior, maintenance, avionics and accessories capabilities at our one-stop-shop in Moline, Ill., we're big enough to handle all of your needs but small enough to give you the personal touch you deserve. From Phenoms, Hawkers, Citations, Beechjets and King Airs to Challengers, Lears and so much more, connect with Elliott Aviation and you'll land a better experience...

because of our service experience.

ELLIOTT AVIATION

GARMIN

800.447.6711 MOLINE DES MOINES MINNEAPOLIS ELLIOTTAVIATION.COM

Medical Coverage and Your Aircraft Policy

by Kyle White

Winter is upon us. If you live in the Snow Belt, it's likely you have the shovels and snow blowers out of storage. We all want to keep our sidewalks and driveways clear of ice and snow for our safety, as well as for those who may visit. This same desire holds true for the ramp and sidewalks around our hangar. What would happen if one of your guests slipped and fell on ice outside your hangar, or while boarding your aircraft? Or the independent contractor who comes to your hangar at night to clean your King Air; what happens when they walk into the trailing edge of the wing and one of the static wicks hits them in the eye?

Managing risk is a good start, but it's important to make sure you are prepared to adequately respond to a potential injury. There are three areas of your insurance policy to review regarding medical coverage: as it relates to your owned aircraft, non-owned aircraft, and airport premises.

Check the declarations page of your policy to determine the amount of medical coverage you currently have. It may be $5,000, $10,000, $25,000, $50,000, $100,000, or more. My first recommendation – don't accept less than $50,000 of medical coverage. Over the years, the insurance market has gotten very competitive, not just with price, but with coverages too. At one time it was standard to have only $5,000 or $10,000 of medical coverage on your policy; now, it is $50,000, or more. As I have mentioned in previous articles, this extra coverage will not cost you any additional premium in today's market.

Checking the amount of medical coverage on your declarations page is just the beginning of making sure you have what's needed. Next, check the fine print of your policy to see if it meets your needs, or if further modification needs to be requested. You want medical coverage to be a per person limit, not a per passenger limit. A per person limit will ensure you will have coverage for crew and people outside of the aircraft,

while a per passenger limit would only cover those inside the aircraft riding as a passenger.

Regarding non-owned aircraft, below is an example from a policy of what you need to be aware of when it comes to determining whether or not you have medical coverage:

"The following conditions must be satisfied in order for this extension of coverage to apply:"

- The other aircraft must have a Standard Airworthiness Certificate issued by the U.S. Federal Aviation Administration or have an equivalent certificate issued by another government.
- The other aircraft cannot be owned or leased by you, your spouse, or any member of your household.
- The other aircraft cannot be a helicopter, unless your policy already covers a helicopter.

This is just an example of three conditions from one policy, your personal policy may be different.

A great example of a non-covered claim: You have an employee riding in a helicopter with a vendor and it takes a hard landing injuring your employee. During the claims process, it is discovered that the PIC didn't meet the pilot warranty, so there is no coverage from the vendor's aircraft policy. Your employee then sues you, but since you only have a King Air and no helicopter on your policy, you don't have coverage per the exclusion. If you don't like these limitations, ask your broker to have the policy endorsed to remove them.

Airport premises medical coverage is also crucial, and depending on how your policy is worded, you may have a huge gap in what is covered. This is something I am meticulous about for my own policy. We like to host hangar cookout parties with as many as 200 people flying/driving in a couple of times a year. If someone slips and falls around the hangar we own (very crucial word there, "own") we could be negligent. One of our clients just built a hangar and is renting some of the space to a friend. He ended up obtaining a separate policy to cover his liability exposure because of the wording in his original policy, in conjunction with generating revenue from hangar rent. The following is a sample of broad wording for medical coverage for airport premises:

"If a person is injured in an occurrence while on airport premises that you own, maintain, or use to park or store your aircraft, and provided that person is on the airport premises with your permission, insurance will pay all reasonable medical expenses that they incur within a year of the occurrence. But these expenses will only be paid up to the applicable coverage limits."

Reasonable medical expenses include:

1. Fees for doctors, surgeons and dentists;
2. Costs for ambulance, x-ray, and hospital services;
3. Fees for professional nurses; and,
4. Costs for prosthetic devices.

"If a person dies within a year of the occurrence as a result of injuries suffered in the occurrence, insurance will pay to the surviving spouse of the deceased or to their estate, reasonable funeral expenses."

The above excerpt includes "owned" airport premises, but some policies exclude hangars that you own, so be sure you review this section of your policy.

While many of you reading this article may have never had a claim, be prepared for the day you do by having the right coverage. I've seen an independent contract pilot walk into a non-moving feathered propeller during a preflight inspection on a King Air 200 and need stitches on his forehead. Note that since he's an independent contractor, there was no worker's compensation coverage available. Last spring, a good friend of mine tumbled off the back of the wing of my Bonanza while deplaning. He was scratched up pretty good, and I recommended he go to the doctor to make sure he didn't have a concussion. His head dented the flap which had to be reskinned. Thankfully, there was coverage in place to cover the damage, as well as his injuries. Accidents happen, and when they do, coverage is crucial.

By having the right medical coverage limits and policy wording, you can potentially avoid being sued. Review your policy for adequate limits and coverage. If you don't like what you see, ask to have the limit or the language modified. If you don't understand it, ask your broker for clarification. It is a buyer's market for aviation insurance; chances are, you can get what you want for no additional premium. Remember, they can't tell you "no" if you don't ask. KA

Kyle P. White is the president of Aviation Solutions, LLC, an insurance brokerage and risk management company, and a former professional King Air pilot. He can be reached by e-mail at *kylewhite@aviationsolutions.aero*.

DEDICATED TO HELPING BUSINESS ACHIEVE ITS HIGHEST GOALS.

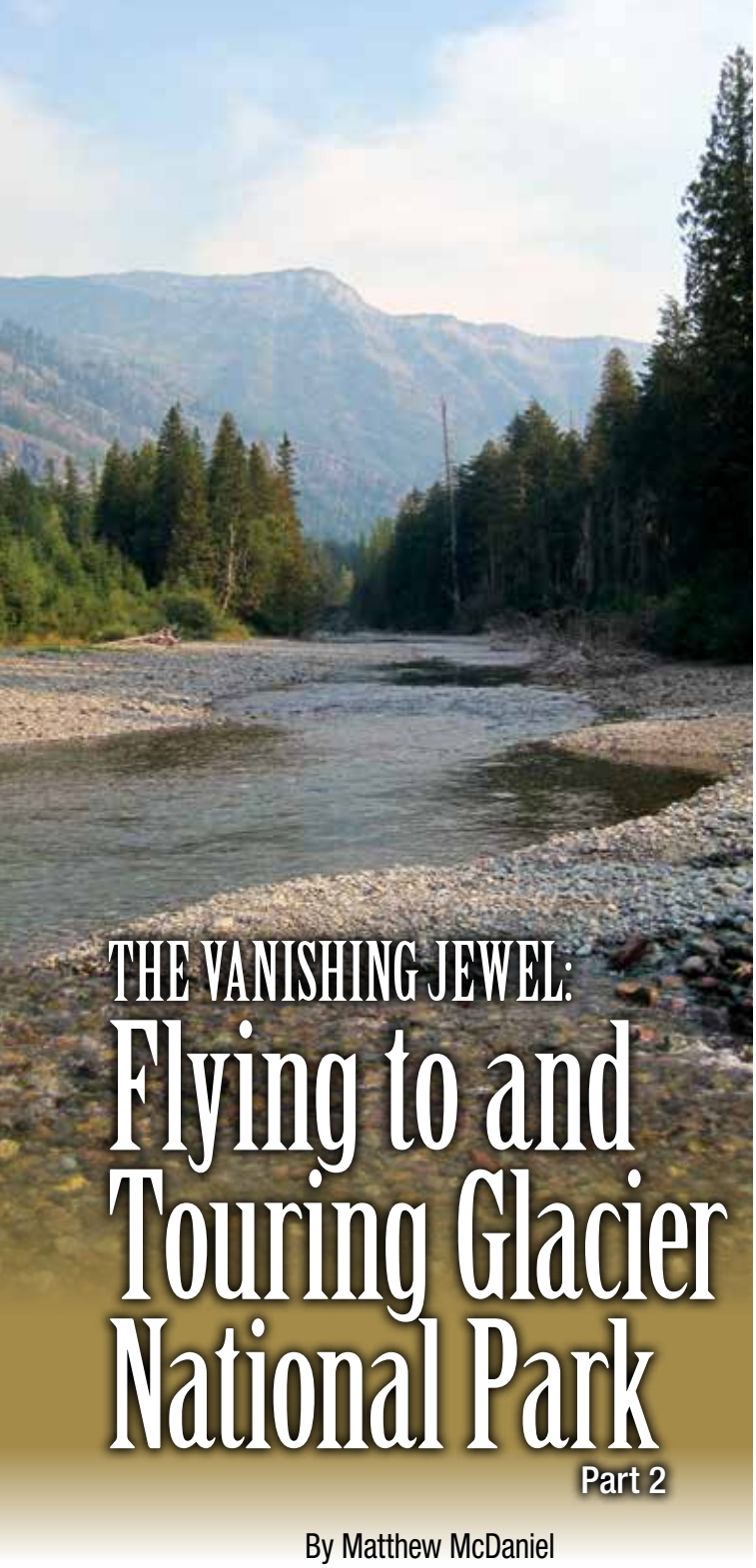
NBAA

REMEMBER WHEN THE SKIES OFFERED

UNLIMITED POTENTIAL? THEY STILL DO.

When Stephen MacGordon set one of the first altitude records, he couldn't have imagined where the bar would sit more than a century later. Today, it's not about how high you can fly, but how flying can help your business reach higher. And it's our job to make sure you can do both. So whether it's reaching new customers or making travel more productive, we help businesses, large or small, surpass their goals. Business aviation enables greater potential. And at NBAA, we enable business aviation.

Join us at nbaa.org/join.



THE VANISHING JEWEL: Flying to and Touring Glacier National Park

Part 2

By Matthew McDaniel

In Part 1 of this article, we left off after completing the 53-mile drive across Glacier National Park (GNP) via the famous Going-to-the-Sun Road. We pick up the story along the final stretch of that most picturesque of drives.

The final 10 miles of the Going-to-the-Sun Road follows the north shore of St. Mary Lake (Glacier's second largest lake), ending at the community of St. Mary (year-round population is less than 50). There, we checked into our cabin at the St. Mary Lodge & Resort and picnicked on our porch, a few yards from

Many Glacier Hotel as seen from the opposite shore of Swiftcurrent Lake.

Divide Creek, enjoying views of Otokomi and East Flattop Mountains. The St. Mary Visitor's Center provided tips for seeing the eastern park and we ventured out again for a quick hike to a historic ranger station. Afterward, we decided there was enough daylight left for more exploring and proceeded north to the Many Glacier area.

American Alps

Several chalets and lodges are scattered throughout the park. Most were built in the parks earliest years, prior to the completion of the Going-to-the-Sun Road, by the Great Northern Railroad to boost tourism (and ticket sales) to the area. With so many of Glacier's peaks having the steep and jagged appearance of the Alps, the railroads made liberal use of European architectural styles and promoted the experience as an alternative to lengthy and costly vacationing across the Atlantic. The largest and oldest such lodge is the Many Glacier Hotel.

About 30 minutes north of St. Mary, Many Glacier Hotel offers incredible views of Swiftcurrent Lake and the steep, Swiss Alp-like peaks surrounding the Swiftcurrent Valley. While Many Glacier is a named glacier within sight of the hotel, the hotel's name was derived from the fact that so *many* glaciers could be viewed from its location. Ironically, only a few of those glaciers remain today, Many Glacier itself being one of them. Celebrating its 100th anniversary in 2015, it's hard to imagine the hardships encountered by workers battling brutal cold, wind, snow, and terrain to erect the grand Swiss-style lodge during the winter season a century ago.

A short drive west is the Swiftcurrent Campground and Trailhead. Taking advantage of the long hours of sunlight

available this far north in late summer, we wrapped up our day with one more three-mile nature hike. While the Alp-esque spires were captivating, sighting a moose cow and her calf feeding in a glacier-fed lake was the highlight of the evening. Back at the cabin, my pedometer read nearly 35,000 steps for the day and sleep came easily to us all.

Oh, Canada

Due to the fire-induced closure of Hwy 2 (which follows the perimeter of GNP's southern half), we had to bypass the areas south of St. Mary, which were the most frequently visited regions in the pre-Going-to-the-Sun Road years (1910-32). We were most disappointed to have to skip Two Medicine, in particular, which remains popular today for its vivid rock and foliage colorations and numerous waterfalls. Our alternative was north to Canada and Waterton Lakes National Park.

Winding through the Blackfeet Indian Reservation, the mere 45-minute drive to the border crossing was desolate. The whole area is free-range cattle country and we met many cows on and alongside the road.

A bridge over this waterfall takes you into the parking area for the Many Glacier Hotel. Swiftcurrent Lake is one the other side of the bridge.

However, we did not see a single other vehicle between St. Mary and the border. Re-entering the park just prior to the border, clearing customs was a simple matter of presenting passports and answering a few friendly questions. The next 45-minutes was spent cruising to the Waterton Townsite in crystal clear (smoke-free) air, marveling at the panoramic views and endless visibilities. Unlike the tiny villages found in U.S. National Parks, Canadian parks can encompass towns with year-round populations and all sorts of commercial retailers and eateries. Such is the case at Waterton, where around 100 people reside year-round in a village so quaint and friendly that it only enhances the experience of visiting the park.

Waterton's most predominate feature is the Prince of Wales Hotel. Also built by the Great Northern Railroad, it was done so with a slightly different motivation. Built during the 1920s-era of U.S. prohibition, the railroad hoped to lure travelers (and sell tickets) into Canada where tourists could imbibe legally, while enjoying the superbly crafted hotel and its breathtaking views. Situated at the confluence of Upper and Middle Waterton Lakes atop a promontory, one must stroll around the front lawn to truly appreciate both the location and the weather it helps create. Ringed by miles of towering mountains and deep valleys, the hotel is routinely exposed to howling winds that funnel through the valleys and accelerate as they pass over the bluff. Half the experience of the view is taking it in while leaning steeply into the wind to avoid being toppled over. The hotel is welcoming to guests and gawkers alike, offering fine dining choices and high-tea by the huge picture

The Prince of Wales Hotel, near the Village of Waterton, Canada.

The view looking south, from the front lawn of The Prince of Wales Hotel. The Lower Waterton Lake extends across the border into the U.S. and is nearly 500 feet deep in places.

windows. As with most lodging within Glacier-Waterton, the Prince of Wales Hotel's season is less than four months long – from June to mid-September.

Waterton has two main scenic drives in the southern part of the park. The 16 km (10 mile) Akamina Parkway, follows Cameron Creek southwest-bound and ends at the north shore of Lake Cameron. In the crisp morning air, Lake Cameron was as clear as bottled water and offered a variety of human-powered boating options (motorized watercraft are prohibited). The south shore, which was actually back across the border, in Montana, is prime Grizzly habitat and boaters and hikers are warned not to approach that area, but instead to observe from a safe distance with binoculars and telephoto lenses. Yet there are miles of safe, peaceful hiking to be had along Lake Cameron's western shore and in the adjacent forests. The 15 km (9.3 mile) Red Rock Parkway ends at Red Rock


Add Lockers & Strakes
to your KING AIR 250...
Bring it fully into the 21st
Simply More of What You
Bought Your King Air For!

ATTRACTIVE COMBO PRICING
$76,408

More combos available for other King Air models. Check out website!

info@raisbeck.com (206) 723-2000
(800) 537-7277 www.raisbeck.com

RAISBECK ENGINEERING

Blankiston Falls is a short hike from the Red Rock Canyon, both situated at the end of the scenic Red Rock Parkway in Waterton Lakes National Park, Canada.

Canyon, where trails to waterfalls and down into the canyon itself beckon. Rain shortened our hiking there, but didn't dampen our appreciation for the vibrantly colored canyon. After stopping back at the town site for warm drinks, we'd unknowingly saved the best for last. Approaching the park exit, we spotted a juvenile black bear snacking on wild berries. We were able to stop near enough to watch easily, but without disturbing its meal (other than it giving us an occasional nonchalant glance). I'm sure its mother was probably watching warily from the thick brush or lakeshore nearby, but she did not make her position known. Nonetheless, it was a thrilling moment for us all. We retraced our route back to St. Mary, making one stop along the way. The Blackfeet Reservation and Glacier areas are known for their abundance of wild huckleberries and we stopped at a little cafe near the tiny hamlet of Babb to pick up some dessert to go with dinner at the cabin. Turns out that huckleberry pie is double the price of more traditional berry pies, but when in Rome!

Departure

During our final night in Glacier, the wind howled and the rain slapped the roof of our cabin relentlessly. Even

A juvenile black bear was foraging for food between Lower Waterton Lake and the main road, approaching the park exit from Waterton Lakes National Park.

our exhaustion from our day in Canada was not enough to allow us to sleep soundly through the calamity outside. But, when we awoke with the sun, we were greeted by the season's first fresh snowfall on the mountain tops and they glimmered beautifully against the dawn's red sky.

We heard that Highway 2 had reopened and we briefly considered taking that route around the southern perimeter of the park, back to Kalispell. While that route was far longer, it would have all been virgin territory to our eyes. We reconsidered when we learned that much of the route was limited to one lane and that the two-way traffic would be metered for long portions of the route. Instead, we bisected the park again, via the Going-to-the-Sun Road. But, this time, the scenic overlooks on the eastern portion of the road had been reopened and we were able to partake of several views and paths that had been off limits two days before. This helped break up the drive back to Kalispell and made us wish we had more time to explore the scenery of Glacier.

Re-entering civilization and cellphone coverage, I made a quick call to Glacier Jet Center (GJC) less than an hour prior to our arrival there. As requested, they had our plane fueled and awaiting our arrival on the apron a few steps outside the FBO's door. We were allowed to pull alongside it to transfer our belongings from the rental car to the plane. Inside, the Jet Center's modern flight planning facilities and other amenities made the process of heading-out quick and painless (even for the kids, there was a great lobby and kid-friendly television to hold their attention). The GJC staff reclaimed the rental car, collected our payment, and we were on our way. Departing KGPI was not tricky or difficult, but attention should be given to the Departure Procedure (DP). Technically, an Obstacle Departure Procedure (ODP) versus a Standard Instrument Departure (SID),

On our last morning in the Glacier area, we awoke to the first snowfall of the season. The mountain tops north of our St. Mary cabin glimmered in the sunrise, capped with a fresh coat of white.

the SKOTT TWO DEPARTURE should be referenced whether departing IFR or visually. As luck would have it, it was good VFR to about 10,000 feet MSL and we were able to remain clear of the surrounding mountain terrain visually during the initial climb out. Although, ATC did assign us a turn that I refused, preferring to continue the climb out over the Kalispell VOR (FCA) and on towards SKOTT Intersection (per the ODP) to gain more altitude and terrain clearance before beginning the mountain crossing on the eastward route. This route also takes you over the sparkling Flathead Lake for one last memorable view of the area before turning for home. Near Glacier, the Rockies are quite narrow, west-to-east, making the crossing of the jagged peaks a relatively quick affair. Nonetheless, they are still the Rockies and all the requisite precautions are still in order. The

most prevalent, even on VFR days with light ground winds, is respecting the wind speed and direction while climbing across the peaks. Winds can shift and increase quickly in the climb, causing possible strong downdrafts, wind shears, and mountain turbulence that will make you wish you'd put a little more altitude between the aircraft's belly and the terrain before turning to cross the spires. Mountain wave downwind of the range can make for uncomfortable rides, as well. Establishing the likelihood of mountain wave should be part of your flight planning, in order to choose routes and altitudes least likely to be affected by it.

Proceed Direct

In 1910, President Taft signed the bill establishing Glacier National Park as the 10th park in the National Park System. At the time, its name was wholly appropriate. When European settlers first began to take notice (in the 1850s) of the beauty and vast natural resources in the area, there were at least 150 glaciers still actively reshaping the landscape and providing vital resources to all manner of nature and wildlife downstream. Today, that number has dwindled to 25 active glaciers. If climate change trends continue, scientists believe that GNP's remaining glaciers will disappear within the next 15 years (by 2030). Waterways will shrink, once mighty waterfalls will become trickles or dry up completely, and all forms of plant and animal life will have to adjust. Many types will, undoubtedly, be unable to adapt fast enough and will become extinct within Glacier. Thereafter, the park may remain stunning in its rugged and secluded beauty, but it will never again be viewed in the same way. Its name will become a reminder of what once was, rather than a description of what is. So, file your flight plan with the most direct routing feasible and activate it before, like the Glaciers, it's valid time is allowed to expire and you miss the opportunity to see something that for the next generation will exist only in photos and author's musings. KA

Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI & IGI. In 25 years of flying, he has logged over 15,000 hours total, over 5,500 hours of instruction-given, and over 2,500 hours in the King Air & BE-1900. 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 also flies the Airbus A-320 series for an international airline and holds six turbine aircraft type-ratings. Matt is one of less than 25 instructors in the world to have earned the "Master Certified Flight Instructor" designation for seven consecutive two-year terms. He can be contacted at (414) 339-4990 or *matt@progaviation.com*.

Beacons: Rotating or Not; Red or Not

by Tom Clements

It is likely that the majority of operating King Airs in use no longer have a rotating beacon. A beacon? Sure. One with an electric motor that rotates the bulb(s)? Quite unlikely.

Those old beacon motors were a weak link in the system, often freezing in one position. One theory is that the grease in the bearings got very stiff when exposed to the cold temperatures up in the flight levels, leading to eventual binding of the mechanism.

Owners quickly tired of buying new beacons only to have them also fail in a frustratingly short period of time. Aircraft lighting manufacturers came out with new designs that eliminated the motor. Most of these have a pulsating device that makes the light rhythmically glow bright and dim, giving the appearance of a rotating bulb and hence attracting the same level of attention. These have become a popular retrofit item.

Others have chosen to replace the original rotating beacon with a strobe light. Although this is also an attractive option, there is almost universal finding of a minor, but annoying, problem when this change is made. Namely, when installed as a replacement for the beacon on the belly, the strobe capacitor's charging and discharging cycles can usually be heard very clearly on the ADF. Having the NDB's ident being overshadowed by the "Woosh-Snap-Woosh-Snap-Woosh-Snap" sound of the strobe is annoying! Who uses NDBs any longer? Yes, that's a valid point, but the strobe sound also interferes with finding the score of the game on your favorite AM station! So if you still use an ADF at times, I suggest you avoid a belly strobe.

In the 1970s, when the model 200 was being certified, the FAA's rules had been amended to require a brighter beacon, one having more candlepower. It was found that the easiest method of compliance with this new regulation was simply to replace the light's red lens cover with a white one. You will notice that all 200s and later models leave the factory with white, not red, beacons.

This seemingly minor change led to an interesting "unintended consequence." Beech's test pilots for the 200 program reported that the beacons were now giving undesirable distraction when flying at night. Of course, as in airplanes with the less-bright red beacons, the switch could always be turned off when inside a cloud. But even in clear air, the pilots were finding too much distraction from the belly beacon reflecting its light from the lower nacelle area, from the back side of the propeller blades, and from the inboard gear door when the gear was extended.

The black paint that is not the designer's idea.

Part of the solution was to paint the offending areas of the inboard nacelle and gear door with a flat black paint that absorbed the light reflection well. The solution for the propeller blades reflection was to add two blocking fins on the belly, to the left and right of the front side of the beacon, to block the light from reaching the propellers. (And you thought those fins were antennas, didn't you?!)

So operators of later King Airs need to realize that the somewhat unattractive splotches of flat black paint

The antennas that aren't.

that spoil the otherwise great look of their new paint job is not some designer's whim, but rather they keep the airplane "legal" by reducing the cockpit light distraction to the level intended by the designers and the FAA.

I have seen lots of used King Airs with great new paint jobs that have raised doubt in my mind as to their "legality." Few, if any, maintenance shops or FAA inspectors will likely be aware of the light shielding that is required with the white beacons and as long as the pilot(s) don't find it overly distracting, who cares? But now you know why the "better" paint shops will inform you about the need for those weird black paint patterns that they must apply.

Another thing that raises doubt in my mind comes when the white beacons are replaced with red ones. Are they bright enough? Maybe so, but I would want the manufacturer to address that with me. I am quite sure that red strobes are plenty bright. So if the ADF interference is not an issue, this replacement path is probably fine.

Amazing, isn't it? That something as simple as a rotating beacon can lead to such extra attention in FAA certification? KA

King Air expert Tom Clements has been flying and instructing in King Airs for over 43 years, and is the author of "The King Air Book." He is a Gold Seal CFI and has over 23,000 total hours with more than 15,000 in King Airs. For information on ordering his book, go to *www.flightreview.net.* Tom is actively mentoring the instructors at King Air Academy in Phoenix.

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

The Air Capital of the World: Beginnings

A year after the end of World War I, a talented aircraft designer from Chicago and a roustabout from the oil fields of Kansas transformed a sleepy city on the Plains into the epicenter of America's general aviation aircraft industry

by Edward H. Phillips

The question has often been asked, "Why Wichita?" What has made that city, long hailed by its residents as the "Peerless Princess of the Prairie," the focal point of light airplane manufacture. There is no shortage of explanations: its central location in the United States, the ease of shipping raw materials into the town, aero-minded businessmen; the flat, nearly featureless topography that offered a natural landing field. Some people have attributed its fame to Walter H. Beech or Lloyd C. Stearman, while some say it was the pioneering flights of Clyde V. Cessna. Although all of the above could be considered as valid factors in the city's rise to fame, the author has his own opinion – oil, more than anything or anyone else, put wings on Wichita.

Nestled at the juncture of the Arkansas and Little Arkansas rivers, the town had been settled by the Wichita Indians who migrated north from Texas and Oklahoma after the Civil War. During the years of the cross-country cattle drives that began long-distance treks from deep in the heart of Texas, the people of Wichita became accustomed to the presence and the smell of thousands of beef cattle. These animals were herded along for hundreds of miles by roughneck cowboys who, after months on the trail, were looking for a hard-earned good time on the town. Wichita soon became an important stopover point on the famous Chisholm Trail, and by the 1870s had expanded into a bustling trading center for livestock and agricultural products.

Of these, wheat was king and reigned supreme until the early 20th century, when the search for petroleum under the Kansas sod ignited an explosion of growth. When oil was discovered there in 1915, demand for workers to build wooden rigs and labor in the oil fields caused the population to skyrocket, nearly doubling overnight to about 30,000 people. Soon, the local landscape was peppered with wildcat drilling sites piercing the earth in hopes of striking "black gold," albeit with no guarantee of success. Among those speculating in the rush to cash in on crude oil was a Wichita resident and risk-taker named Jacob Melvin Moellendick, known as "Jake" by his friends.

Moellendick had worked as a tool dresser in the oil fields of Pennsylvania before moving to Oklahoma, where he established the Okmulgee Producing & Refining Company. He also drilled wells in Butler County, Kansas, east of Wichita. It was Jake's oil money that would give birth to Wichita's next big business – "aeroplanes."

Clyde Vernon Cessna was a self-taught aviator who, in 1911, abandoned a successful automobile sales career to seek his fortune in aviation. He brought his Cessna Exhibition Company with him when he relocated to Wichita in 1916, and built the first airplane manufactured in the city. (EDWARD H. PHILLIPS COLLECTION)

Flying machines, however, were nothing new to the town. In 1911, Wichita businessmen led by Orville A. Boyle sponsored an "air meet" that was held at Walnut Grove north of the city. A group of well-known aviators including Jimmy Ward, Eugene Ely, C.C. Witmer and R.C. St. Henry flew their fragile Curtiss biplanes in a series of daily exhibitions that thrilled the crowd of 11,500, but left Boyle and his co-sponsors with empty pockets. Despite Boyle's red ink, many Wichitans thrilled by the sight of those brave men in their "aeroplanes" soaring so effortlessly through the air – a large number were permanently bitten by the flying bug. As a result, in 1912 about 200 men formed the Wichita Aero Club that successfully hosted the National Balloon Races in 1913. The races returned to Wichita two years later when the lighter-than-air craft helped the town celebrate its annual Wheat Show.

Flying fever had reached such a high pitch in the city that by 1916, influential members of the Aero Club had

Cessna constantly improved his early flying machines, all of which were monoplanes. By 1914, he had become a competent pilot making a good living from exhibition flying, but as with E.M. Laird, his chief desire was to build and sell airplanes. (EDWARD H. PHILLIPS COLLECTION)

approached Kansas aviation pioneer Clyde V. Cessna about relocating his aerial exhibition company to Wichita. In an attempt to sweeten the deal, they offered Cessna facilities in an automobile factory owned and operated by J.J. Jones. The factory built trucks known for their robust durability, as well as the popular "*Jones Light Six*" touring car.[1]

Cessna was well known in the Midwestern United States for the monoplanes he flew at local events as well as state and regional fairs, and was always assisted by his older brother, Roy. By 1910, Clyde was a highly successful Overland car salesman living in Enid, Oklahoma, but when he witnessed an aerial meet in Oklahoma City in 1911, he shifted his full attention to "aviating." He quit selling automobiles and traveled to New York City where he worked briefly for a company that was building copies of the Bleriot IX monoplane (in 1909 Louis Bleriot became the first person to fly from France across the English Channel).

Cessna purchased a monoplane (less the engine) and had it shipped to Enid. He installed an Aeromarine engine in the fragile ship and taught himself to fly on the broad salt plains of Oklahoma. After a tumultuous learning curve that saw him crash multiple times, in December 1911 he finally succeeded by taking off, flying a circular course and landing without incident. During the next few years, Cessna built a new airplane each winter in preparation for the upcoming exhibition season, which proved lucrative as long as he was able to fulfill his contracts for flights. His chief adversary was the wind. If it was blowing more than 5-10 mph, he was unable to fly because his monoplane was almost uncontrollable, particularly in the roll and yaw axes.

When he agreed to move to Wichita, Clyde's exhibition business continued to earn significant amounts of money, but he was becoming increasingly interested in manufacturing and selling monoplanes, not only flying them. By 1917, Cessna had built two airplanes, both of which were the first to be constructed in the city. He attempted to build his monoplanes and sell them to customers in Wichita and the Midwest, but his efforts fell on deaf ears. In addition, it is important to note that Clyde opened a flying school with five eager students on the roster. The school was one of the first to offer flying lessons west of the Mississippi River.

When the United States entered World War I in April 1917, Clyde was forced to cease exhibition flying and close the flight school because of government restrictions on civil aviation activity, raw materials and gasoline. Despite the war's unwelcome interruption, Clyde Cessna holds the distinction of not only being Wichita's first resident aviator, but also its first airframe manufacturer.[2]

After the Armistice was signed in November 1918, Wichita's aviation-minded men believed the city needed a flying field, and in 1919 the Aviation Committee of the Chamber of Commerce had designated the parcel of land adjacent to the J.J. Jones factory as the town's first airport. The first pilots to fly into the makeshift, unimproved "aerodrome" were members of the Victory Liberty Loan Flying Circus that arrived on April 1, 1919, to officially dedicate the facility. The next month America's foremost World War I ace, Captain

A view inside the J.J. Jones factory, located north of the city, shows the first airplane built in Wichita, with the second under construction. (EDWARD H. PHILLIPS COLLECTION)

Clyde Cessna's best pre-war design was the two-place "Comet," powered by a six-cylinder Anzani radial engine rated at 60 horsepower. In 1917, Cessna posed with the recently-completed monoplane in front of the Jones factory. All of his early designs incorporated wing warping for roll control.
(EDWARD H. PHILLIPS COLLECTION)

"Eddie" Rickenbacker visited the airfield and gave an impassioned speech about aviation and its future, both militarily and commercially.[3]

Influential members of the Committee included local businessmen Walter P. Innes, Jr., J.J. Jones, Jack Turner and "Jake" Moellendick. All of these men were destined to play important future roles in the development of the city's aircraft industry, but it was Moellendick who believed most fervently in the airplane as a viable, commercial transport vehicle. He took his unbridled enthusiasm to the next level by proposing the formation of a start-up company aimed specifically as promoting air travel. Such a bold venture would require significant funds, and that is where oil began to play its vital role in making Wichita "The Air Capital of the World."

Thanks to profits flowing in from his oil wells, Jake had become a wealthy man and possessed the means to make his aviation dream a reality. He took the first step by becoming the principal investor in the Wichita Aircraft Company located about one mile northeast of the city. Flush with funds from Moellendick's bank account, the company built hangars and acquired three Canadian-built Curtiss "*Canuck*" biplanes to serve a flight school and the air taxi operation. Jake was so optimistic about the company's success that he envisioned an airline passenger service between Wichita and Kansas City, Kansas, and Tulsa, Oklahoma.

Although Moellendick often used biplanes to visit his oil wells, the immediate future of the venture looked increasingly bleak, chiefly because of too few paying customers. It soon became apparent that the Wichita Aircraft Company was ahead of its time, perhaps too far ahead, and by late 1919 it was bleeding Jake's bank account dry. He was unable to interest other businessmen to invest in the venture, and he slowly began to realize that the public was simply uninterested in aviation and had little or no faith in its future. Undaunted, Moellendick continued to pour his own money into an unprofitable business. In an attempt to change the color of the balance sheets from red to black, late in 1919, he hired an experienced businessman, pilot and friend from Oklahoma named Billy Burke, who operated the National Exhibition Flyers and sold automobiles in Okmulgee. Billy accepted Jake's offer and relocated to Wichita. He took control of day-to-day operations and quickly reasoned that part of Moellendick's problem were the decrepit old Canucks. Their Curtiss OX-5 engines were often unreliable, the front cockpit held only one person (thereby limiting profits), and the former primary trainers required constant maintenance and repair to maintain airworthiness. In short, Billy told Jake the ships were totally unsuitable and had to be replaced, but replaced by what?

Jacob Melvin Moellendick was a visionary who believed firmly in the future of commercial aviation. He used his money from oil wells to establish Wichita as one of America's earliest centers of airplane manufacture.
(EDWARD H. PHILLIPS COLLECTION)

Burke thought he had the answer to Jake's predicament. Billy knew a self-taught pilot, aircraft designer and builder in the windy city of Chicago by the name of Emil Matthew "Matty" Laird. In June 1919, he had sold Burke the first Laird Model S two-place sport biplane powered by a 50-horsepower Gnome rotary engine flown by Burke on the airshow circuit. A young man in his mid-20s, Laird was blessed with

a keen, inquiring mind that applied logical, scientific processes to solve problems associated with the design, building and flying of aircraft.

During 1912-1913, Matty constructed his first airplane in the attic of the Laird home in Chicago, and by 1915 he had built a number of lightweight airplanes that performed well on meager horsepower. His skill, both as a pilot and designer, soon earned him the respect of his fellow aviators who flew their ships from the epicenter of flying in Chicago at that time, the famous Cicero Field. Burke knew that Laird was designing a new airplane that featured a two-place front cockpit and a robust airframe. There was nothing revolutionary about the ship, but it represented a step forward compared to the Canuck. Laird, however, had little choice but to use the ubiquitous OX-5 engine to power his next design.[4]

Emil Matthew Laird came to Wichita in 1919 to build his latest design – a three-place, double-bay, open cockpit biplane that was among the first aircraft designed specifically for the commercial flight operations.
(JOAN LAIRD POST COLLECTION)

Burke suggested to Jake that he offer Laird the opportunity to build his new airplane in Wichita. Jake seized upon the idea and dispatched Billy to Chicago. Burke explained to Matty that the combination of Moellendick's oil money, adequate facilities in downtown Wichita to manufacture aircraft, and Laird's promising design made the risk worthwhile. In the wake of Billy's visit, Laird agreed to visit Wichita and meet Moellendick to better assess the situation. Matty needed money to build his airplane, and there was none forthcoming in Chicago. He soon realized that the opportunity being presented to him by Moellendick and Burke would allow him to manufacture airplanes on a scale that dwarfed his best efforts in Illinois. After much discussion, Laird accepted Jake's offer and relocated to Kansas. The new business, to be known as the *E.M. Laird Company Partnership*, would succeed the impoverished and defunct Wichita Aircraft Company.[5]

In February 1920, Matty arrived in Wichita and began preparations to manufacture the "*Laird Wichita Tractor*" – a somewhat clumsy moniker more representative of a farm implement instead of an airplane. A small group of craftsmen skilled in woodworking were hired, and by March the first airplane was ready for final assembly. One month later, the ship was transported by truck to the former Wichita Aircraft Company's flying field north of downtown Wichita, and prepared for its maiden flight. In the late afternoon of April 8, Matty climbed into the aft cockpit and the engine soon roared to life.

Satisfied that the OX-5's vital signs looked good, Laird taxied out to the grass-covered flying field, turned the "*Wichita Tractor*" into the wind and applied full throttle. The ship lifted off the ground after a takeoff run of about 200 feet. Two minutes later Laird leveled off at an altitude of 1,000 feet, checked the ship's basic handling qualities and descended slowly back to the airport, landing without incident. What happened next is a part of Wichita's fascinating aviation folklore. William Lassen, owner of the city's Lassen Hotel, commented to Laird that the biplane flew more like a Swallow than a "Tractor"! The name hit Matty like a brick – it was perfect for an airplane that flew so well, and he quickly renamed his creation the "*Laird Swallow*."[6]

In the wake of the first flight, Jake was ready to put the Swallow into full production, but Burke and Laird chose to proceed slowly. Initial plans called for building 10 airplanes with the goal of selling 25 by the end of 1920 – an ambitious goal, considering that a market for new airplanes essentially did not exist. There was a market for hundreds of aircraft offered by the United States government at bargain prices, many of them with near zero flying time, and these served to suppress demand for airplanes such as the Swallow.

It is important to note here that the Swallow, contrary to "hearsay history" that has spread far and wide for decades, was not the first "new" commercial airplane in

Laird with the *"Boneshaker"* biplane that he used for aerial exhibitions. Built in 1916, the airplane was his third design and was powered by an Anzani radial engine rated at 45 horsepower.
(JOAN LAIRD POST COLLECTION)

The *"Swallow"* was built in downtown Wichita and trucked north to the flying field at 29th and Hillside Avenue where the biplanes were assembled, rigged and flown before delivery to customers.
(JOAN LAIRD POST COLLECTION)

the United States to be introduced after the war. There were a plethora of small and large airframe companies from coast-to-coast building fresh designs hot off the drawing boards, or converting war-surplus aircraft such as the de Havilland DH-4 and Curtiss JN-4 biplanes, for a multitude of missions that included air mail, medical evacuation, light transport and private flying.

In an effort to set Wichita's historical record straight and to underscore this important point, four examples can be given as evidence: First, and perhaps the best case is the Orenco "*Tourister*" that made its debut in May 1920, the same month the Swallow flew for the first time. The biplane accommodated two passengers in the spacious front cockpit, while the rear cockpit accommodated another passenger and the pilot. The ship used a Wright-Hispano engine rated at 150 horsepower. Second, in 1919, the Thomas-Morse Aircraft Corporation based in Ithaca, New York, offered a two-place conversion of its wartime S-4 fighter dubbed the "*Sociable S-7*" powered by an 80-horsepower Le Rhone rotary engine. Another example, designed by engineer Giuseppe Bellanca, was the "*Bellanca Two-Seater*" powered by a six-cylinder Anzani radial engine. The ship was hailed as the perfect mount for the "Progressive Merchant, the far-sighted businessman, the stunting exhibition flier, the thrill-loving sportsman, the efficient passenger carrier, and the steady-going average man." A fourth example is the "*Ace*" – a single-seat biplane designed and built by the Aircraft Engineering Corporation in New York City. In its advertisements, the company was quick to point out that the Ace was "neither a freak nor a worn-out, second-hand ship – but a small, modern, thoroughly tested scout that lands slowly, climbs quickly and has excess power – making it as practical on a small field, golf course or bathing beach as on the biggest of army airdromes."[7]

Therefore, contrary to hearsay, the fact is that Matty Laird's Swallow was only one of many postwar designs that could accommodate more than one passenger. Other than that important feature, its state-of-the-art airframe and engine technology brought nothing new to an almost nonexistent commercial aviation marketplace.

Four fuselages in various stages of construction can be seen in this view of the factory, including Laird's Model S sport biplane at far left, which he brought with him from Chicago. Lloyd Carlton Stearman (standing, far left) was an early employee. During 1921-1923, he learned the basics of aircraft design and construction from Laird. In the years ahead, Stearman would become one of Wichita's foremost manufacturers of aircraft.
(JOAN LAIRD POST COLLECTION)

Although Laird realized that only a miniscule demand existed for new aircraft, Mr. Moellendick saw only the bright side of the situation. After the Swallow's first flight he was ebullient about the airplane's future, so much so that he informed local reporters that "Mr. Laird is very optimistic about the manufacture of commercial machines, and maintains that his machine is not inferior to any for commercial purposes." Fortunately, word about the new ship spread rapidly across the nation, and soon letters of inquiry were pouring into the downtown factory along with an increasing number of visitors bent on examining the Swallow.

The only missing ingredient in Laird's recipe for success was sales. Among the first companies to plunk down a deposit for one airplane was the Heddon Aviation Company in Michigan. By late summer, the E.M. Laird Company partnership was awash with orders from customers in New York, New Jersey and Colorado, and Matty declared that production was sold out for 1920. Meanwhile, company manager Billy Burke was kept busy flying far and wide making demonstration flights with an early production Swallow, appointing dealerships in Oklahoma, Massachusetts and Illinois, and selling the Swallow as an obvious replacement for war-weary surplus aircraft. It was, however, a hard sell because a new Swallow sold for about $6,500 when a Curtiss JN-4 trainer in good condition could be bought for $500-$1,000.

By August, Laird's workers were completing one airplane per week and Matty hoped to double that number by December. One local Wichita newspaper reporter summed up the situation well: "Our 1920 pride in our production of one plane per week doubtless will serve for a humorous little commentary. In the present state of the aircraft business, a factory producing one plane per week is a large factory…and the future of the business is bright."[8]

An indication that the Swallow was well built and performed as advertised is expressed in a letter from Reed E. Davis, sales manager for the North Platte Aircraft Company, Inc., located in Nebraska: "The first Swallow we got grossed us approximately $3,000 in the two weeks we have had it, and I believe business will be equally as good for the next few months. The planes are certainly giving satisfaction to us and the performance of them is surprising everyone who has used the OX-5 motor in Canucks and JN-4Ds. We have no difficulty in getting out of small fields carrying two passengers and full tanks of gas, and we have flown the Swallow at altitudes as high as 4,500 feet."

Laird and Burke's goal of selling 10 airplanes was realized in September, and another 10 ships were in various stages of construction and assembly. By that time the workforce had increased to 45 men, some of whom would become icons of the general aviation industry and pillars of Wichita's aviation heritage. These included William Snook, Walter Strobel, Lloyd C. Stearman, his brother Waverly, and Walter H. Beech.

During Laird's first 24 months in Wichita, he had achieved a level of success that probably would not have occurred had he remained in Chicago. Thanks largely to Moellendick's steady flow of oil money and Burke's efficient management of the business, Matty was free to concentrate on establishing himself as one of America's earliest manufacturers of commercial airplanes. As 1920 came to an end, the E.M. Laird Partnership had sold every airplane it had built, had an order backlog that stretched well into 1921, and the operation was on sound financial footing.

The New Year, however, would bring with it key changes in management that would lead to Laird and Moellendick butting heads over management of the company, setting the stage for Matty's return to Chicago. KA

NOTES:

1. Today, the term "aviation pioneer" is often applied to men and women who were not part of that early era of aeronautics. Clyde Cessna, however, was truly a pioneer in every sense of the word, not only in Kansas, but in the United States.
2. Cessna returned to his farm in Rago, Kansas, and operated a profitable custom threshing business with his son, Eldon. Threshing wheat was lucrative chiefly because demand was high – the United States Government needed bread to feed its troops as well as British, French and Belgian soldiers fighting for the Allied cause against Germany.
3. McCoy, Sondra J. Van Meter: "*The Primary Contribution of E.M. Laird to the Aviation Industry of Wichita*;" The University of Wichita, June 1962, page 9.
4. The water-cooled Curtiss OX-5 was built by the thousands before and during the war and was a plentiful, albeit cantankerous, eight cylinder powerplant. The engine was readily available, inexpensive (as little as $50 new in crates) and sufficiently reliable. The OX-5 played a vital role in the establishment of America's infant lightweight airplane industry until the advent of the air-cooled, static radial engine and the opposed piston engine spelled its demise.
5. Phillips, Edward H.: "*Laird Airplanes—A Legacy of Speed*;" Specialty Press, North Branch, Minnesota, 2002.
6. Ibid
7. "*Aviation and Aeronautical Engineering*" magazine; The Gardner-Moffatt Company, New York City; May 1, 1919.
8. *Wichita Eagle*, August 21, 1920, page 4. In 1920, Matty Laird could not have imagined that his tiny company in downtown Wichita would be the genesis of a major industry. By 1929, the city would boast no less than 16 airplane companies, five engine manufacturers, seven service and repair businesses, 1,640 acres of flying fields and 11 airports.

Ed Phillips, now retired and living in the South, has researched and written eight books on the unique and rich aviation history that belongs to Wichita, Kan. His writings have focused on the evolution of the airplanes, companies and people that have made Wichita the "Air Capital of the World" for more than 80 years.

StandardAero Launches PT6A FASTLANE™ Engine Maintenance Program for Hot Section Inspections, Repair and On-Site Services

StandardAero has launched a new, customized accelerated response program to support PT6A turboprop engine operators with hot section inspections, repairs and on-site field services.

This new program includes but is not limited to, on-wing inspections by a certified StandardAero Field Service Representative (FSR), Service Center support and OEM approved repairs. The company chose the term FASTLANE because, in most cases, StandardAero can complete on-wing inspections and most repairs to put operators back in the air within three days (if booked 30 days in advance).

Primary engine models for the FASTLANE program include PT6A-41/-42/-60A/-114A/-135A. Dozens of other PT6A engine models may also apply for the FASTLANE program. With the 30-day advance provision for scheduling the services, StandardAero will guarantee a one-day turnaround time for inspection and two days for engine workscope repairs.

Operators are required to provide StandardAero with engine performance data one week before the scheduled service along with accurate engine logbook information with updated LCF data (times & cycles). In addition, customers' aircraft must be available when StandardAero's FSR/Technician arrives onsite along with providing access to proper hangar and support equipment. Certain other conditions/exclusions may apply.

For more information, go to: *http://www.standardaero.com/Engines/PrattWhitney/PT6A.aspx.*

Luma Technologies Receives EASA Certification for LED Annunciator Panels on King Airs and FAA Certification of LED Glareshield Washlight Kits for C90

Luma Technologies has obtained European Aviation Safety Agency (EASA) certification for the installation of its LT-4500 Series LED Caution Warning Annunciator Panels on a broad range of King Air models. With this STC, any fleet operator or authorized dealer can install the panels in accordance with EASA guidelines. The STC covers seven different panel sizes depending on which model is involved and all are compatible with any level of instrumentation or avionics suite installed.

Luma has had their original FAA Approved Model List (AML) STC since 2011 and has been slowly adding additional models over the years. While EASA does not recognize the AML format, Luma's EASA STC covers numerous King Air models including the C90A, C90GT, C90GTi, 200, 200C, 200CT, 200T, B200, B200C, B200CGT, B200CT, B200GT, B200T, 300, 300LW, B300, B300C and 1900D aircraft.

LT-3500

Luma has also received approval to add its LT-3500 line of LED Washlight Kits to its AML STC covering a broad range of King Air models. Luma's LT-3500 Washlight Kits are a modular LED solution designed to replace the legacy incandescent approach. The company says initial approval is limited to C90s for now, but will be expanded to include all major models over the coming year.

The Luma system is sold in kits containing two to five LED Light Bar Assemblies with modular quick-connect wiring strings that daisy-chain together. Like all of the Lumatech™ line for King Air, the system is designed as a drop-in, plug and play replacement to the existing installation. The system can be installed on a standalone basis or combined with Luma's LT-4500 Series of LED Caution Warning Advisory panels certified for the C90 (LJ-1063 and newer) and larger King Air models.

West Star Aviation Announces Mobile Response Team Field Support

West Star Aviation is proud to announce their Mobile Response Team "MRT" supported by a wide network of MRO facilities and support shops. The company says the MRT allows it to deliver their award-winning service and experience to customers when and where it's needed.

The MRT provides "in-the-field-level" repairs and modifications as well as temporary repairs necessary to ferry an aircraft to one of their closest full service MRO facilities. Locations that offer MRT service include: East Alton, IL (ALN), Grand Junction, CO (GJT), Centennial, CO (APA), Chicago, IL (PWK) and coming soon, the newest location Chattanooga, TN (CHA).

Aircraft operators in need of service can contact West Star MRT Dispatchers Randy Cissell at (573) 768-4197 or Rob Carnahan at (618) 823-3316 or use the West Star "Experience On Call®" Mobile App.

For more information, visit *www.weststaraviation.com* or call (800) 922-2421.

FlyRight Adds King Air 350 Part 135 Training and Receives Commuter Category Qualification for King Air 200 Series

FlyRight has added the capability to provide training and checking services to King Air 300/350 Part 135 operators. Training programs include Initial BE-300 Type Rating and Recurrent courses with Part 135 checks. FlyRight, an FAA-certificated Part 142 training center specializing in King Air pilot training, began offering King Air 350 training and Type Ratings in 2013 and recently became eligible to offer Part 135 training for the King Air 300 series aircraft.

Training will be conducted on FlyRight's Level D King Air 350 simulator, located at its Charlotte area training center. The simulator is equipped with Rockwell Collins ProLine 21 avionics and a 200-degree visual system with worldwide terrain capabilities and also converging traffic on the ground and while airborne, which offers operators the opportunity to train for conflict recognition and avoidance.

FlyRight's Level D King Air 350 simulator.

FlyRight's King Air B200 simulator has been qualified by the FAA at Level C for training and checking of pilots in accordance with Commuter Category weights and performance, up to a maximum gross weight of 13,420 pounds. The simulator is also located at the company's Charlotte area headquarters.

LoPresti BoomBeam HID Lights Now Available in Australia

Australian Avionics recently became the Elite Dealer for LoPresti Aviation BoomBeam HID lighting in Australia. The BoomBeam lights are FAA- and EASA-Approved for all King Air Models, and are said to produce 1300% more light than standard aircraft lighting.

For more information, visit: *http://www.loprestiaviation.com/*

KingAir

ADVERTISING DIRECTOR JOHN SHOEMAKER
2779 Aero Park Drive, Traverse City, MI 49686
Phone: 1-800-773-7798
Fax: (231) 946-9588 • E-mail: **johns@villagepress.com**

SADDLE TANKS

KING AIR 90, 200, & 350 SERIES

COMBINE WITH HALO 250
GWI ON KING AIR 200 SERIES
FOR MAXIMUM RANGE

FUEL CAPACITY

ST190 - 95 gallons each tank
ST120 - 60 gallons each tank
ST72 - 36 gallons each tank

IN GOD WE TRUST

CENTEX AEROSPACE INCORPORATED

7925 Karl May Drive, Waco, TX 76708
254-752-4290 www.centex.aero

STORAGE WITH LEATHER INTERIOR

ST120 - 36" x 28" x 12"
ST72 - 55" X 28" X 12"

MAKE YOUR KING AIR FASTER FOR LESS THAN YOU'D IMAGINE.

READY. SET. GOGO.

Email | Text | Voice | Internet | Cockpit apps

Adding in-flight connectivity to your King Air lets both you and your passengers fire up your devices and apps—including cockpit apps—and get things done in flight. That makes you faster. And with systems starting at just $35,000*, plus Pay As You Go data plans, and even financing, it's all a lot more affordable than you'd imagine.

Find out more: business.gogoair.com/kingair

baconnect@gogoair.com | +1 303.301.3271

*Does not include installation or certification.

gogo BUSINESS AVIATION