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FEBRUARY/MARCH 2019

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ON THE COVER: A 1946 Luscombe 8A lifts off Mille Lacs Lake following Iceport 2018 at Twin Pines Resort in Garrison, Minnesota. The 65 hp A&C-powered aircraft is owned by Gregory Norb of Farmington, Minnesota. Iceport 2019 is scheduled to be held Saturday, March 2, 2019, from 10:00 a.m. to 3:00 p.m., weather and ice conditions permitting. To confirm dates and ice conditions, call Mark Priglmeier at 320-200-8050 and Twin Pines Resort at 320-692-4413 (www.twinpinesmillelacs.com). Pilots are urged to use extreme caution whenever operating on ice. Braking action may be compromised, and like any fly-in, pedestrians are in the area. Monitor 122.9 MHz. Pilots are urged to call ahead and confirm the frequency, as well as runway direction and conditions, and traffic patterns. Also be sure to check for NOTAMS. *Brad Thornberg Photo*

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Much More Than Merely A Collection

by Dave Weiman

You will read in this issue of *Midwest Flyer Magazine* about EAA's Wright Brothers Memorial Banquet held at the Experimental Aircraft Association (EAA) Aviation Museum on December 7, 2018. You will also read about the banquet speaker, former astronaut Frank Borman, who donated his collection of personal archives and memorabilia to EAA. EAA in turn created an exhibit in Borman's honor called *"The Borman Collection: An EAA Member's Space Odyssey,"* and it is significant.

First, the exhibit recognizes Frank Borman's contributions to the National Aeronautics & Space Administration (NASA) and space exploration. He was the commander of the famed Apollo 8 mission, which in December 1968, involved the first manned spacecraft to orbit the Moon.

Second, Frank Borman is a fellow general aviation pilot and EAA member, and he wanted EAA to have his collection because in his own words, *"I have the greatest respect for what they do. I believe they are responsible for preserving general aviation and our ability to fly. It means so much to me for this collection to be here and that others will enjoy it."* Frank Borman's willingness to share with others and safeguard his collection resonates strong with me, as I am sure it resonates strong with you.

I have had the privilege to know and work with a number of astronauts over the years. Most, if not all of these fine human beings, are members of our national pilot organizations and in that way, we share a camaraderie with one another. The astronauts I've known are the brightest of the brightest, and very modest of their accomplishments and contributions. Frank Borman is one such person.

I hope you enjoy the feature story beginning on page 26. ❑

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The IRS May Disregard Your LLC, But You Shouldn't

by Greg Reigel, AAL

Greg Reigel

As you may know, an aircraft owner may use a limited liability company ("LLC") to register and hold title to the owner's aircraft. An LLC is formed by filing articles of organization with the Secretary of State (or equivalent) in the state in which the LLC is organized. The LLC has members who hold/own membership interests in the company that are represented by the members' capital accounts. The LLC may be managed by managers or it may be managed by the LLC member(s).

An LLC is a type of business entity that has distinct legal personality from its owner(s)/member(s) and managers. An LLC is treated as a separate "person" in the eyes of the law with an independent existence from its members. Thus, if the owner/member of an LLC dies, the entity continues to exist (although an LLC needs to specifically elect to have this continuity of existence).

However, once set up, the laws governing LLCs require that certain formalities be observed (e.g. annual meetings, separate checking accounts, maintaining corporate/company books and records, filing annual renewals/registrations etc.). If the LLC does not comply with those formalities, it is possible that the law will not recognize the LLC as a separate "person" and will look to the LLC's members or managers to personally honor the LLC's obligations. This is called "piercing the corporate veil." Not only is this a bad situation for the LLC members, this concept is frequently confused with the Internal Revenue Service's treatment of an LLC as a "disregarded entity."

Although an LLC is a "legal entity," the Internal Revenue Service ("IRS") does not treat an LLC as a "tax entity." Rather, the IRS "disregards" LLCs for federal tax purposes as if the entity does not exist. Most LLCs with a single member are taxed as a sole proprietorship, while a multi-member LLC is usually taxed as a partnership. In some cases, the LLC can elect to be treated as an "S" corporation if the LLC satisfies certain criteria.

As a disregarded entity, a single-member LLC does not file an income tax return or report income, loss, deduction, or credit. Instead, the LLC member incorporates

these tax items into the member's tax return. Similarly, multi-member LLC's members and the members of an LLC that have elected "S" corporation tax status would report on their respective tax returns.

If you are using an LLC to own an aircraft, keep in mind that the IRS's disregard of your LLC for tax purposes does not relieve you of your responsibility to comply with the formalities required by the laws applicable to LLCs. Failure to comply with the formalities can negate the personal liability protection otherwise afforded to an LLC's members, and can also render the aircraft's registration invalid. So, it is important to pay attention to both the tax and the legal aspects applicable to your LLC to take advantage of the benefits of owning an aircraft with an LLC.

EDITOR'S NOTE: Greg Reigel is an attorney with Shackelford, Melton, McKinley & Norton, LLP, and represents clients throughout the country in aviation and business law matters. For assistance, call 214-780-1482, email greigel@shackelfordlaw.net, or Twitter @ReigelLaw. ❑

Upcoming Special Events

64th Annual Wisconsin Aviation Conference To Be Held In Green Bay

The Wisconsin Aviation Conference (WAC) will be held in Green Bay, Wis., May 5-7, 2019. Register online at the Wisconsin Airport Management Association (WAMA) website: https://wiama.org/events

The conference will open again beginning with sporting events and networking opportunities on Sunday, and continue with professional sessions on Monday and Tuesday. The 2019 WAC will be filled with timely topics for all attendees including Wisconsin airports, consultants, and representatives from the Wisconsin Bureau of Aeronautics and Federal Aviation Administration.

WAMA is seeking nominations for its 2019 awards to be presented at the conference. Nominations of persons or projects must be made online at https://wiama.org/Awards by March 16, 2019.

Nominees can be submitted for the following awards:

- Distinguished Service Award
  - Awarded to an individual who has made an outstanding contribution to aviation.
- Blue Light Award
  - Awarded to an individual in the media who has distinguished themselves by their excellent reporting on Wisconsin aviation.
- Person of the Year Award
  - Awarded to an individual who has distinguished themselves in Wisconsin aviation during the past calendar year.
- Lifetime Service Award
  - Awarded to an individual who has devoted themselves to promoting and serving Wisconsin aviation for at least 10 years.
- Airport Engineering Award
  - Awarded to an individual who has made significant professional contributions in the airport engineering or architecture fields in Wisconsin.

WAMA annually awards up to $2,000 in professional development scholarships to its members. WAMA also awards up to $2,000 annually in collegiate scholarships to students. Applicants must apply online at https://wiama.org by March 16, 2019. ❑

IA Mechanic Refresher Seminar

The annual Wisconsin DOT Mechanics Refresher and Inspection Authorization (IA) Renewal Seminar is scheduled for Saturday, February 16th, 2019 at the Crowne Plaza Milwaukee Airport Hotel and Convention Center in Milwaukee, Wisconsin. The seminar will feature an exhibit hall with numerous industry representatives and displays. Throughout the day speakers will present on a variety of FAA-approved aviation maintenance topics. Tickets are $35 and early registration sales end February 1st. For more information please visit the WisDOT website at: **https://wisconsindot.gov/Pages/doing-bus/aeronautics/trng-evnts/mech-ia.aspx.** ❑

SAVE THE DATE & PARTICIPATE

8th Annual MINNESOTA Aviation Day At The Capitol

The aviation community will come together at the Minnesota State Capitol to visit with their state senators and representatives to explain the importance of Minnesota aviation and local airports to their constituents and to their communities.

Everyone involved in Minnesota aviation, who understands the importance of our airports, is encouraged to attend.

10:00 a.m.	Kick-Off @ St. Paul Downtown Airport at Historic Terminal Building - NE Corner of Airport
10:30 a.m.	Aviation Issues Update
11:30 a.m.	Luncheon with Legislators
2:00 p.m.	MN Aviation – Meet your Legislator @ State Capitol
5:30 p.m.	Social & Hors d'oeuvres @ St. Paul Downtown Airport Terminal

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How To Hold Altitude Like A Pro!

by Harold Green, CFII


Harold Green

Ever notice how some pilots hold exact altitude with no apparent effort? Wonder how they do it? The key is knowledge and practice. Knowledge can be used to minimize the required practice time. Practice simply requires time and attention. Hopefully the following information will aid you in acquiring this skill with a minimum amount of practice time.

One of the first skills to master is reading flight instruments with little or no effort. Only when establishing or changing flight conditions as you reach your target altitude, is it necessary to actually read the numbers on the flight instruments. Once established and in stable flight, there is no need to actually read the numbers on the dials with any frequency. It is only necessary to note the pattern of needle excursion from the original readings.

Scanning the instruments becomes akin to speed reading. Of course, not only is the actual excursion important, the rate of excursion is also important. If the altimeter is moving slowly, and the Vertical Speed Indicator (VSI) is off center only a little, a gradual corrective control input is desired. If the vertical speed indicator indicates a rapid change of altitude, then more immediate control input is needed. The goal here is to stop the VSI movement. Then you can move the altimeter needle back to its original position with appropriate pitch or power corrections.

The speed of correction is also very important. Suddenly you notice you are 100 feet off your target altitude, probably because your attention was diverted. The usual reaction is to correct the situation instantaneously, but sudden changes are not necessary, and can startle passengers. Indeed, with a gradual return to altitude, maybe no one except you even noticed. Another very important factor is the pilot's goal to hold altitude with zero deviation.

As the final altitude is approached, level flight is achieved by changing pitch and power to hold the altitude. Appropriate power and pitch are adjusted to achieve level flight. During the transition to level flight and a stable airspeed, it may be desirable to adjust the trim to ease the force. However, recognize that final trim will not be achieved until the airspeed is steady.

It is necessary to fine trim the airplane by adjusting the trim to remove the control wheel force while holding airspeed steady. General aviation aircraft, when properly trimmed, fly for long periods of time in smooth air with no pitch correction from the pilot, providing power input remains constant.

Having trimmed your aircraft, it is time to look at reasons why your aircraft can deviate from level flight, and what can be done to overcome this. The principal factors are: pilot generated control input, turbulence, and center of gravity (CG) excursions.

Probably the most prevalent cause of unintended altitude excursion is "pilot induced." Typically, this is caused by unintended control input. The two most prevalent causes of such inputs are muscular reaction while reaching for something in the cockpit, and what can be described as attempting to "drive" the airplane.

Consider the "reaching" effect. When the pilot reaches for something in the cockpit, such as a radio control, an approach plate, or aeronautical chart, both arms tend to become involved because of the way our arms and torso are connected. The further the reach and the further to the side, the greater the impact. This results in changing force on the control wheel. The result is a change in roll and/or pitch, and usually both. Once the pilot becomes aware of this, the cure seems to follow automatically. It just requires awareness on the part of the pilot.

When "driving" the airplane, the pilot is constantly moving the controls, usually the pitch and roll, regardless of need for control input. That is opposed to simply using the controls to correct any excursions from steady flight by the airplane. The individual seems to be seeking confirmation of control by moving the controls and sensing a response from the airplane. The result is that precise and smooth control of the airplane is very difficult. It is usually very difficult to correct this problem as the pilot is so used to such actions and is subconsciously doing it. It takes dedicated attention on the part of the pilot to correct this habit and often requires someone pointing out the practice as it occurs.

Much of the turbulence encountered results in merely bumps in the road with little or no altitude change. However, it is not uncommon for pilots to react to the abruptness of the turbulence, rather than the actual altitude effect. The result is sporadic control input with pilot induced altitude excursions. To prevent this the pilot should react to the effect on the airplane altitude or attitude and ignore the abruptness of the bumps. Initially, this can take considerable mental discipline, but it rapidly becomes second nature.

At the next higher stage, turbulence can cause altitude excursions requiring correction. In this case corrections should

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be applied as early and gradually as possible. This minimizes the stress on both airplane and passengers. However, there are times when turbulence is a significant factor in altitude excursions.

The most extreme of these are the conditions found in a thunderstorm. In this case you are advised to forget altitude and maintain airspeed and heading. However, there are other atmospheric conditions which prevent holding altitude.

One example of this is the waves encountered at times over mountains. While often accompanied by turbulence, these waves at times can be quite peaceful. If you are on a wave downslope, you can find yourself applying full power, holding Vy and still descending while in apparently smooth air. (Vy is the indicated airspeed for best RATE of climb. Vx is the indicated airspeed for best ANGLE of climb.) In this case, all you can do is ride it out, and perhaps turn to minimize the exposure time. On the upslope you may be pitched down approaching Vne (never exceed speed) with power removed and still climbing. If you are IFR, this is a perfect time to request "block altitude." Obviously holding altitude in these conditions is secondary to maintaining airspeed, just as in a thunderstorm.

Center of gravity (CG) shifts can also cause altitude deviations. CG shifts can be caused by someone including the pilot, leaning forward or backward while in level flight. Should this occur, it is necessary only to re-establish altitude. No pitch or power adjustments need to be made unless the altitude excursion is excessive and there is need for immediate altitude corrections, rather than a gradual change. In some airplanes, particularly some twins, it is possible for the CG to shift as fuel is consumed. In these cases, trim must be adjusted to ensure altitude hold. Fuel shift is gradual and can be compensated for with small trim adjustments as the flight progresses.

In summary, attention to the gauges, acceptance of high standards, and proper trimming and smoothness of control, coupled with attention to these details whenever flying, will result in better altitude control with an overall improvement in flying.

EDITOR'S NOTE: Harold Green is an Instrument and Multi-Engine Instrument Instructor (CFII, MEII) at Morey Airplane Company in Middleton, Wisconsin (C29). A flight instructor since 1976, Green was named "Flight Instructor of the Year" by the Federal Aviation Administration in 2011 and is a recipient of the "Wright Brothers Master Pilot Award." Questions, comments and suggestions for future topics are welcomed via email at harlgren@aol.com, or by telephone at 608-836-1711 (www.MoreyAirport.com).

DISCLAIMER: The information contained in this column is the expressed opinion of the author only, and readers are advised to seek the advice of their personal flight instructor and others, and refer to the Federal Aviation Regulations, FAA Aeronautical Information Manual and instructional materials before attempting any procedures discussed herein. ❑

Books & Videos

AOPA 80th Anniversary Book Now Available!

FREDERICK, MD – The Aircraft Owners and Pilots Association (AOPA) is commemorating its 80-year history by releasing the book "Freedom to Fly: AOPA and the History of General Aviation in America," filled with breathtaking photography, little-known artifacts, and discovered historic pieces.

Entertainingly written to offer clever insight and backstories, the book tells the history of general aviation through the lens of its biggest advocate, dating back to 1939, when AOPA was founded.

For the past 80 years, AOPA has fought to keep pilots flying when war, technological advances, economic booms and busts, and politics threatened our access to the skies. Today, as the largest aviation community in the world, AOPA still works hard every day to improve affordability, accessibility, and safety.

Learn about the triumphs and tragedies that defined generations of pilots from the editors who bring you AOPA Pilot and Flight Training each month. For more information visit www.aopa.org/freedomtoflybook. ❑

Good Training & Aeronautical Decision Making

by Michael J. "Mick" Kaufman

Michael Kaufman

A popular topic this time of the year is "icing." I have written about icing several times before, as have most aviation columnists, and though I will reinforce the seriousness of icing, this column will be more centered on "Aeronautical Decision Making" (ADM), which has become a part of the aviation vocabulary. A recent fatal accident reinforces this topic.

We all have decisions to make in our everyday lives, but none are more important than the ones we make in flying our aircraft. In a way, we could call it "risk management." If we get out of bed in the morning and go about our daily routines, we are all taking risks. If we did not take risks, we surely would never get in our aircraft and no one would be doing any flying.

To realistically assess risks, we need "knowledge." The knowledge of where icing is severe enough to create a moderate or greater risk is still much of a mystery to even the best pilots.

Twenty-plus years ago, I had an extreme fear of "icing" and "thunderstorms," especially imbedded thunderstorms. Those are the ones you cannot see as they are obscured by surrounding Instrument Meteorological Conditions (IMC). Since then, thunderstorm depiction equipment in the cockpit has improved greatly, and my fear has subsided. Not that I no longer fear thunderstorms, but when you know where they are, you can avoid them. Icing is a different story. If we could go to our magic boxes and have them show us where the icing is and avoid it, we would have far fewer accidents.

A comment I have made many times before is that if you are flying in clouds or moisture and the temperature is below freezing, you WILL get ice! The big question is, how much?

Several years ago in early spring, I was flying with an instrument student and we were going to an aviation function from Wisconsin to Ohio. I am careful while training pilots, so I was extremely cautious when checking weather with some possible icing to make sure that we would have another option should things get out of control. Our out was that the ceilings were high enough to allow us to fly below the clouds above the Minimum Enroute Altitude (MEA) during our entire

flight, and that temperatures at those altitudes were above freezing. All was routine in IMC conditions below freezing, picking up a trace of ice that could barely be measured until we got near the Peotone (EON) VOR. Suddenly without any warning, we hit a pocket of moisture, and we had 3/4 of an inch of ice in barely two minutes. This pocket was short lived, and the flight was in no immediate danger, so I allowed my instrument student to experience flying with ice on the aircraft before descending several thousand feet to a temperature above freezing below the clouds.

Not playing a Monday morning quarterback as some people do, we will never know the circumstances that surrounded the fatal accident I mentioned at the beginning of this article; however, we knew it involved icing, high terrain and a high MEA.

Aeronautical Decision Making must start with "knowledge," as without knowledge, we have nothing in which to base our decisions. A great deal of this knowledge comes from our own experience and some comes from the experience of others. That is where good flight training comes in, and I must mention the training program I manage called *"Bonanza Baron Pilot Training."* There are similar programs for other type-specific aircraft namely Cirrus, Comanche and Mooney, as some of the better-known programs, and I am sure there are others. Nothing beats in-person training as it allows pilots to interact with their instructors and other participants. I would also like to mention that the FAA sponsors programs to educate pilots as well, and either the type-specific programs or the government agency-sponsored programs may qualify pilots for Wings Credit and a Flight Review.

I remember one such course, which I took many years ago, on thunderstorms and using airborne radar, presented by an instructor by the name of Archie Trammell. This man was considered the best of the best in radar and thunderstorm avoidance. It was a sell-out crowd of aviators, including most of the inspectors from the Milwaukee General Aviation District Office (GADO), as it was known at that time, as well as many airline and corporate pilots. The knowledge I gained from this seminar was a lifesaver on an approach into Kansas City some years later in a Beech Baron with radar, as I was trapped by thunderstorms.

ADM is one of the most important parts of aviation safety and instrument flying, and though we learn from many of our own experiences, it is always safer to learn good ADM from others.

There are some flight characteristics of aircraft that are a lot safer and wiser to learn about from an expert pilot or instructor, than to experience them on our own. For example, if the cabin door on a Beechcraft Baron with aftermarket vortex generators should pop open in flight, it could cause such a severe oscillation that it may bend the airplane. We learned in our flight training program to let the pilot close the door and check it carefully before every flight. Whenever you install aftermarket items on an aircraft, you become a test pilot. So, learn from others and save the grief.

Simulator training is a valuable asset to all pilots if you have a good simulator that truly represents the aircraft you are flying.

In my column in the December 2015/January 2016 issue of *Midwest Flyer Magazine,* I mentioned the documentary "Pilot Error," which was based on the Air France Flight 447 accident of an Airbus killing all onboard. The flight originated from Rio de Janeiro, Brazil, to Paris, France, and occurred over the Atlantic Ocean.

The conclusion of the investigation, and the lesson to be learned, was that the pilots did not know their aircraft well enough, and could not figure out that the problem was a frozen pitot tube.

When the investigation was concluded, pilots were evaluated in a simulator and most of them crashed the simulator in the same way as did the pilots of Air France Flight 447. Retraining airline pilots in coping with this procedure in a simulator has prevented accidents and changed ADM for those faced with similar circumstances.

My own experience with a frozen pitot tube occurred some 50 years ago on my instrument checkride which was conducted in IMC conditions below freezing. It was a lesson well learned as I saw firsthand what happened when we forget to turn on the pitot heat. I recognized my error early on and passed the checkride.

In conclusion, it is important to understand Aeronautical Decision Making and the fact that it comes from good training. We cannot take it lightly, and we have to understand that everything in life involves some risk. Flying an airplane can be very unforgiving, so train from the best and most experienced instructors you can find. I remember the first sentence spoken by my first ground school instructor, "The wing is the thing that if you do not understand it, it will kill you." It's better that good judgment is learned from someone else's bad judgment, rather than one's own bad experience.

Have a safe and enjoyable year of flying in 2019.

EDITOR'S NOTE: Michael J. "Mick" Kaufman is a Certified Instrument Flight Instructor (CFII) and the program manager of flight operations with the "Bonanza/Baron Pilot Training" organization. Kaufman conducts pilot clinics and specialized instruction throughout the U.S. in a variety of aircraft, which are equipped with a variety of avionics, although he is based in Lone Rock (KLNR) and Eagle River (KEGV), Wisconsin. Kaufman was named "FAA's Safety Team Representative of the Year" for Wisconsin in 2008. Email questions to captmick@me.com or call 817-988-0174.

A Little Elbow Grease Can Go A Long Way!

by Pete Schoeninger


Pete Schoeninger

Q: I just bought a 4-year-old Cessna 182 Skylane, and want to sell my 15-year-old Skylane. What things can an owner do to a used airplane that will increase value more than the cost of improvements?

A: Not much! But you can do, or have done, a very detailed cleaning of the entire plane, and especially the interior for not a lot of money. Two days of hard work doing very detailed cleaning, and maybe polishing, can add a few thousand bucks to the value, and also reduce the amount of time in selling it. Most buyers have a spouse who will have to approve of the purchase of your airplane. If your plane is dirty, that is a major turnoff, especially to the non-flying marriage partner.

Q: Last week I took off from an airport in my 180 hp Comanche, just after a strong cold front passed. Climbing straight out my rate of climb jumped to over 1000 feet per minute (fpm) for about 30 seconds, compared to my usual 700 fpm with similar load and temperatures. After passing about 1500 feet above the ground, the climb rate returned to mostly normal. What would have caused the spike in rate of climb?

A: Often wind at 1000-2000 feet is much stronger than surface wind after a cold front passes, and the wind is usually from a northern or northwestern direction. I suspect you climbed into a much stiffer headwind, giving you a temporary increase in rate of climb.

Q: A friend insists that t-tailed airplanes are not so good for soft-field operations. If he is correct, why would that be?

A: You often cannot raise the nose early in your takeoff run because the elevators don't have a prop blast on them to make them more effective at low airspeeds. For soft-field operations, you cannot raise the nose until enough "natural" airspeed is reached over the tail. In other words, you might not be able to get the nosewheel off the ground until you reach flying speed.

Q: My Cessna 182 has an electric clock that is powered by the aircraft battery. After several weeks of sitting, I have found that the battery barely has enough oomph to start the engine. Can I have the clock disconnected?

A: You may have a 2-amp fuse on the firewall which can be removed to stop the clock and current drain. Always consult with your mechanic concerning any maintenance issues to ensure safety and that it is done correctly and according to Federal Aviation Regulations and manufacturer recommendations. You could also ask your mechanic for his suggestions on replacing the clock.

Q: I saw a video on the internet of a guy doing an aileron roll with a Cessna 180. Is that legal?

A: No, not unless he has a waiver from the feds, which would be unlikely.

Q: I heard in Alaska you can fly 10% over gross weight. Is that true?

A: Some commercial operators have gotten permission from the FAA to do so on a case-by-case basis. But there is not a blanket approval to do so for anyone.

Q:: I recently spoke with a pilot who makes his living ferrying airplanes around the world. He only does piston twins and larger, and has been doing it for several years. He seemed like a cautious, very knowledgeable pilot. But he said one thing I couldn't figure out. Recently he flew a Cessna 414 from the West Coast to Hawaii. He said his GPS indicator flashed a warning for the first 600 miles or so that he would run short on fuel. Why would he get that warning for only part of the trip?

A: He was probably 20-25% over gross weight when he took off. As such, his gas mileage would be poor because of required high power/high fuel burn. As he burned off fuel, he could reduce engine power/fuel burn. The computer in his GPS was correct, had he continued at his initial speed and fuel burn, he would have landed in the ocean short of Hawaii. But as his load lightened, his gas mileage improved because of power reductions. One of the best analysis of long-distance flight and fuel consumption for light planes is found in documents relating to Charles Lindbergh's flight from New York to Paris 90 years ago (www.charleslindbergh.com/hall/spirit.pdf. Read Donald Hall's article entitled "Technical preparation of the Spirit of St Louis." Heavily loaded with fuel, at a high-power setting, required Lindbergh to maintain altitude, and the Spirit of St Louis only about 7 miles per gallon. At the end of his flight with much lower power settings because he was over one ton lighter, his mileage was about 14 miles per gallon.

Two other comments I've heard frequently from ferry pilots, is that on very long over-water flights, it may be necessary to make provisions for oil to be added to the engine(s.) Also a hard thing for new pilots to do is reduce power for better economy as they burn fuel, while the temptation is to speed up and land quickly after looking at water for many hours.

Q: When you were a manager of a fixed base operation, what things did you see aircraft owners do that could have been done differently?

A: 1) Plan an annual inspection or biennial flight review just before leaving on a two-week vacation. If you have your airplane apart for its annual inspection and have to wait a few days for new parts, or you bust a checkride and need an hour or two of dual instruction… get that done a couple of weeks before leaving.

2) Fill the tanks following the last flight, then ask the FBO to de-fuel you. Most FBOs will not do that for reasons we have previously discussed in other issues.

3) Check the air in your tires more than annually. Also have your mechanic show you how to look at brake linings so you can have them changed when they get worn down, but before they disintegrate.

4) Do have repetitive Airworthiness Directives complied with on time. It's the law, and could save your butt!

5) Keep your maintenance paperwork neat and orderly. Not doing so can add a couple of hours or more to your next annual inspection.

6) When you wash your airplane, wash the belly too. Crud from the breather can corrode belly skins if left for long periods.

Q: I heard you say ice conditions on frozen lakes deteriorate over the winter months as far as landing airplanes go. Doesn't the ice get thicker for much of the winter, meaning it will be safer?

A: Ice generally gets thicker as winter lingers, until weather warms. But over time there may be an accumulation of frozen ruts in the surface from snowmobiles, ATVs, cars and trucks and ice mounds from ice fishermen, etc. Always use great caution when operating on frozen lakes!

Q: A friend said he saw you buy a Cherokee 140 for a company after only looking at it for 15 minutes a few years ago. Weren't you violating your own rules of having an aircraft mechanic do a thorough prepurchase inspection?

A: I remember that airplane…it was a good one! It just had an annual inspection at a very good maintenance facility, which I was very familiar with. While they were a competitor of mine, I knew their mechanics as very competent, good honest people, who gave me a thumbs up report on the

airplane. My quick inspection verified their verbal report to me, so I bought the airplane and had no regrets.

Q: I have been looking at American Champion Decathlons and Citabrias. My only reservation is their useful load seems a little short when you put in two 200 lb. people. Any suggestions?

A: American Champion Aircraft, located near Burlington, Wisconsin, has been quietly making good airplanes designed for various missions. Take a look at their Scout which is much more of a utility airplane than the two models you mentioned. It is a bigger airplane and has a useful load larger than Decathlons and Citabrias. They are often used for back-country or bush work, and owners seem to like them very much.

Q: For 70 years, people have been writing about 65 hp J-3 Cubs versus Aeronca Champs. What's your take on these airplanes?

A: The Champ is much easier to land, a little faster, has much better forward visibility, and on the used market is $5,000 to $10,000 less than a similar Cub. The Cub has better short-field capabilities, and in the summer, a delight to fly with the door open. If you buy either, add a shoulder harness if not already installed. And if you find one with an 85 hp engine, you will never regret paying a little more for the added power. On a hot day, both airplanes are doggy with only 65 hp. If you're looking at both, buy the one that is in the best mechanical shape. Because of their age, a pre-purchase inspection by a knowledgeable mechanic is mandatory!

Q: My friend flies the bush in Alaska during the summer. He recently showed me a trick for making a very accurate landing. He flew my Archer down our local runway with full flaps extended at very low speed with stall warning activated. When he got to the exact spot he wanted to touch down, he retracted flaps all at once, and we dropped in a foot or so onto the runway, just where he wanted. Is this a good idea?

A: Not in my opinion for the average pilot flying from normal airports. If you misjudge speed just a little, or height just a little, "dropping in" can bust your landing gear…maybe even cause a prop strike necessitating an engine tear down, etc. Since you probably are never going into a strip so short you have to land at an exact spot, I wouldn't retract my flaps before touchdown!

Q: Last week after the first cold snap of the season, I flew my new (to me) 2007 Cessna 172R. With an outside air temperature of 10 degrees Fahrenheit at altitude in cruise, my oil temp only went up to 140 degrees versus the 180 to 200 degrees I saw most of summer. Is that normal?

A: Yes, a rule of thumb is that your oil sump temperature should be very roughly 120 degrees warmer than the outside air temperature (OAT). Lycoming (and Continental) recommend a maximum oil temperature in the oil sump of 245 degrees Fahrenheit. To help your engine run a little warmer you should consider cooling baffles. They are recommended for installation when OAT is below a certain figure. For many C-172s that temperature is 20 degrees Fahrenheit. Also, some engines can have a partial cover over the oil cooler if the engine has an oil cooler. You may see duct tape used for cooling restrictions, but I don't recommend it. Cooling restrictors (often called baffles) are carefully engineered for your specific engine and installation. Some engines (not yours) may have cowl flaps that can help a little with temperature control. Stay warm!

EDITOR'S NOTE: Pete Schoeninger appraises airplanes for estates, divorces, and partnership buyouts. He is a 40-year general aviation veteran, starting out as a line technician as a teenager, advancing through the ranks to become the co-owner and manager of a fixed base operation, and manager of an airport in a major metropolitan community. For aircraft appraisals, contact Pete at PeterSchoeningerLLC@gmail.com or call 262-533-3056 (peterschoeningerllc.wordpress.com).

DISCLAIMER: The information contained in this column is the expressed opinion of the author only, and readers are advised to seek the advice of others, and refer to aircraft owner manuals, manufacturer recommendations, the Federal Aviation Regulations, FAA Aeronautical Information Manual and instructional materials for guidance on aeronautical matters. ❑

At Our Airports

AOPA Announces 2019 Regional Fly-In Locations

FREDERICK, MD – In celebration of its 80th Anniversary, the Aircraft Owners and Pilots Association (AOPA) will host three grand, two-day fly-ins for the 2019 season. Returning to two of our favorite fly-in locations and one brand new destination, these aviation celebrations will run all day Friday and Saturday, and will feature expanded exhibit hours, seminars, workshops, aircraft displays, and special aerial demonstrations.

The 2019 AOPA Fly-In locations are: May 10-11, 2019 - Frederick Municipal Airport, Frederick, Maryland (KFDK); June 21-22, 2019 - Livermore Municipal Airport, Livermore, California (KLVK); and September 13-14, 2019 - Tullahoma Regional Airport, Tullahoma, Tennessee (KTHA).

Special events are being planned to include a Short Takeoff and Landing (STOL) Invitational Competition to showcase the skills and aircraft of backcountry flying and an engaging Friday night aviator's party. And at the Frederick, Maryland, location only, just days before AOPA's official 80th Anniversary on May 15th, the D-Day Squadron's C-47s will make a special appearance before they prepare to fly to Normandy, France, for the 75th Anniversary of D-Day.

"In honor of AOPA's 80th anniversary, the 2019 fly-ins are sure to be an unforgettable experience for all aviators, family and friends," said Chris Eads, AOPA Sr. Director of Outreach and Events. "We hope pilots and non-pilots from all over the United States join us as we celebrate 80 years protecting the freedom to fly. There will definitely be something for everyone to enjoy."

For more information on each fly-in, visit www.aopa.org/fly-ins. ❑

See High On Health By Dr. Bill Blank on Page 20

EDITOR'S NOTE: William A. Blank is a physician in La Crosse, Wisconsin, and has been an Aviation Medical Examiner (AME) since 1978, and a Senior AME since 1985.

Dr. Blank is a retired Ophthalmologist, but still gives some of the ophthalmology lectures at AME renewal seminars. Flying-wise, Dr. Blank holds an Airline Transport Pilot Certificate and has 5600 hours. He is a Certified Instrument Flight Instructor (CFII) and has given over 1200 hours of aerobatic instruction. In addition, Dr. Blank was an airshow performer through the 2014 season and held a Statement of Aerobatic Competency (SAC) since 1987.

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New Artwork At KMSP

St. Paul, Minn. – The Metropolitan Airports Commission (MAC), along with Airport Foundation MSP and Arts@MSP, welcomed world-renowned artist Jen Lewin to Minneapolis-St. Paul International Airport (KMSP, November 19, 2018, to present her concept for the interactive, public artwork that will be featured on both the ticketing and baggage claim levels of Terminal 1-Lindbergh. Local collaborating artist Betsy Alwin joined Lewin in presenting the concept.

"We couldn't be more pleased with the concept Jen has created for our airport," said Brian Ryks, MAC Executive Director and CEO. "It's going to be a stunning piece of artwork and we invite everyone to come out and interact with it once it's installed."

The custom-designed piece will be called "Aurora," a hovering wisp of glass and metal, floating above and below the ticketing level floor opening. Created from vintage glass bulbs, an aluminum honeycomb structure, and more than 8,000 twinkling, interactive LEDs, the Aurora will mimic a graceful, ever-changing gesture of light.

Below the Aurora, embedded in the floor on the baggage claim level, will be an interactive cluster of reflective glass platforms, the forms of which generally represent the waters of Minnesota and which are loosely derived from several lakes in the Minneapolis-Saint Paul area.

Standing in the "lakes" will trigger swirling light and interactive color (directly beneath one's feet). The colors will propagate up into the Aurora so that both elements are always displaying the same connected color pallet. Waving one's hands in the air or moving one's body above the lake floor will trigger gentle wisps of color that will stretch up and into the Aurora, resembling a gesture of light.

Minneapolis-St. Paul International Airport (KMSP) is one of seven airports owned and operated by the MAC. KMSP is the 13th busiest airport in the United States and ranks 17th in travelers served. ❑

Be Sure You Have All of Your Ducks In Order

by Dr. Bill Blank, M.D.


Dr. Bill Blank

Over the past several months, I have become aware of several certification issues which prompted this article. Pilots can now meet the medical certification requirements with a valid U.S. driver's license, basic medical exam, or regular FAA Medical. The type and size of aircraft you can fly is determined by the category of medical certification that you hold. In all cases, you are not permitted to fly if you know or have reason to know of any medical condition that would make you unable to operate an aircraft in a safe manner.

Before you ever apply or reapply for a FAA Medical Certificate, you should understand the likelihood of certification with any medical condition you may have. You may be able to safely fly a light sport aircraft as a sport pilot, but not be certifiable for an FAA Medical. Therefore, it is important that you not ignorantly apply to see what would happen, get turned down, and then discover that you cannot fly as a sport pilot.

When you complete FAA Form 8500-8 online, question 18 in all of its subparts, asks you if you ***"have ever been diagnosed with."*** That means if you had an appendectomy at age 7, you must keep reporting it on every exam, even if you are now 70. You might ask why. It is because the FAA legal bureaucracy has decided to prevent an Aviation Medical Examiner (AME) from looking up information you put on any previous exams he did not do. He will be able to see what you checked yes to, but not the details. Go figure. With modern electronic medical records, any doctor in a large health system could look up your records which are in his system.

When you check yes to any subpart of question 18, you must comment on it. Your AME must also do so. This is where I suggest being careful. If you have a condition that you are unsure of, do some research. Check with AOPA or ask your AME. Find out what information you need to provide. Get it ahead of time. It can be gathered up to 60 days prior to the flight physical. Read it. Make sure it provides all information needed and there are no deal stoppers. If so, stop right there and do not proceed until any issues have been addressed so that you can be certified. When your AME submits your exam, he should indicate that supporting information is being submitted.

This brings up the confirmation number. Doctors generally look up patient's old records prior to seeing them. I have become aware that some AMEs or their staffs are requiring your confirmation number ahead of time. The problem here is that when the confirmation number is entered into the FAA computer system by the AME or his staff, the exam is considered to have started. You may not get in for a few days. In any case the exam must be competed within 14 days after the confirmation number was entered and submitted to the FAA. If not, it must be deferred. A better option is to print the completed form and email it or bring it to your AME. That way he can still look at it ahead of time. Unfortunately, many AMEs or their staffs are not always aware of the implications of what they do. If your AME insists on entering your confirmation ahead of time, you may want to find another AME. This is especially true if you need clarification ahead of time before deciding to proceed.

As you know the FAA works slowly. I am hoping to help you get certified more quickly. Therefore, if you have a condition where deferral will be necessary and more information required, submit the information the day the exam is done. Otherwise, the FAA will need to request more information, you will need to gather and submit it, and the FAA will need to evaluate it. This could easily add three (3) months to the process. I am aware of a recent situation in which eight (8) or nine (9) months could have been saved by doing it my way.

ADHD (Attention Deficit Hyperactivity Disorder), formerly ADD (Attention Deficit Disorder) is becoming an issue. People who have this condition cannot be certified. Symptoms of the condition include limited attention, hyperactivity, and impulsivity. Normal people demonstrate these traits too. There is a spectrum from normal to abnormal. It is treated with medications such as Ritalin, which is itself disqualifying.

The problem is that in the past ADHD was frequently and incorrectly over diagnosed. Not paying attention in school, or getting poor grades, frequently resulted in a diagnosis of ADHD with Ritalin being prescribed. Some demanding parents even requested that their children who were making good grades, but not straight As, be put on Ritalin to improve their performance. The diagnostic criteria have now been better defined. The symptoms must have lasted more than 6 months and occurred in more than one setting. The symptoms must have been present after the age of 12.

From the FAA point of view, if you have ever been diagnosed with ADHD, you must be off medications for 90 days, and have passed psychological testing. A new ADHD/ADD evaluation protocol was issued November 28, 2018. Since many people have had this erroneous diagnosis, I would not report it unless I was sure that I had it. If you took medication for two (2) years 20 years ago and saw no improvement, you probably did not have it. FAA Form 8500-8 doesn't ask if you had ADHD. If you need to report it, use question 18l regarding neurologic disorders, etc.

Prior to seeking FAA medical certification, be sure you have your ducks in order. What I hoped to do with this article is tell you how to get ahead of the certification process before you ever see your AME. That will, I think, speed up the process.

Happy flying! ❑

Making Memories In Hot Springs, Arkansas

by Yasmina Platt


Yasmina Platt

An unknown author once said, "The best things in life are the people you love, the places you've seen, and the memories you've made along the way." I could not agree more and general aviation really makes it easy for us to connect all three of those. One trip is particularly fresh in my mind.

My father passed away, unexpectedly, a little more than a year ago. Many of my memories with him have been running through my mind since. My parents and I shared a few wonderful GA trips together. One of those was a long weekend in Hot Springs (the "Spa City"), Arkansas to celebrate my mom's birthday. I recommend flying to Hot Springs; it is a great place to visit with convenient logistics.

The National Park System (NPS) is one of the best things the U.S. has to offer. My parents had not been to the one in Hot Springs, so we rented a Grumman Tiger and off we went… My mom sat up front with me (flying, navigating, etc.), and my dad was happy in the backseat watching us, reading, and looking out the window.

Yasmina Platt with her parents, Timo and Maria-Angel, after securing the Tiger at KHOT.

With about a 150 kt groundspeed, we made it to the Memorial Field Airport (KHOT) fairly quickly. From there, it only takes about 15 minutes to drive to town and to the entrance of the National Park. There are multiple ground transportation options to choose from: 1) The airport has a courtesy car for quick errands. 2) Some of the hotels have shuttles. 3) You could ride bicycles (we have folding bikes that

Exciting finish for one of the horse races at Oaklawn Racing & Gaming.

we often take with us). 4) You can call a taxi or a Transportation Network Company (TNC). 5) One can always rent a car as well. Because we went in January when it is too cold to do any outdoor water activities, and since we wanted to walk/exercise and take in all the local sights, we took the shuttle to the hotel and walked around the rest of the weekend until our departure.


Quapaw Baths along Hot Spring's Bathhouse Row.

Hot Springs is a quaint and quirky Victorian town with fascinating history that includes warriors, gamblers, mobsters, and a recent U.S. President. Hot Springs is Bill Clinton's hometown.

The Hot Springs National Park is a little different from most other National Parks. While it does have a few short hiking trails, it is centered around the soothing thermal waters known for their healing and relaxation powers. So, we walked around Bathhouse Row, including a visit to Arlington Lawn to see the fault where the hot springs emerge, tried a couple of different bath houses, and hiked to the 216-foot high Mountain Tower, even though the views from the airplane were much better!

We also went to Oaklawn Racing & Gaming to watch horse races – they are quite a big deal in Hot Springs. They normally have races Thursday to Sunday, from the end of January (when we went), to the beginning of May. They also offer (responsible) gambling for those interested.

While we did not engage in these activities, Hot Springs is also known for boating, fishing, biking, and attractions of different kinds (for example, a water and theme park, museums, a zoo, and an aquarium). Lakes Catherine, Hamilton, and Ouachita are within a few minutes of the Spa City – perfect for splashing in the summer months.

You can see by the photos I posted on my "Air Trails" blog www.airtrails.weebly.com that we had a great time and made long lasting memories. If only I could plan another such trip with my dad…

Live life! Enjoy spending time with your favorites! Travel! Fly GA! Make memories every chance you get! Look at your calendar and plan a trip to the Hot Springs area. It is a fairly central location with easy logistics.

EDITOR'S NOTE: Yasminia Platt has been with the international airport planning and development consulting firm AECOM since 2016. She also writes an aviation travel blog called "Air Trails" (www.airtrails.weebly.com), in addition to articles on "Pilot Destinations" for ***Midwest Flyer Magazine.*** Pilots can locate articles Yasmina Platt has written by going to www.MidwestFlyer.com and typing in her name in the search box. ❑

Innovation Is In Our DNA

by Mark Baker
AOPA President & CEO


Mark Baker

Powered flight is one of if not the greatest innovations in the history of humanity. For thousands of years, people looked at birds and wondered what it would be like to see the world from above. That is, until the Wright brothers decided to spend some time on the beaches of North Carolina.

It was only 36 years before the founding of AOPA in 1939 that humans achieved the first sustained powered flight. Technology has also come a long way in making the skies a safer place to fly. From ADS-B to autopilots, aviators today have access to avionics and electronics that help us be more aware of our surroundings, and operate our aircraft more safely than ever before.

Few technologies being discussed today can equal the potential of electric or hybrid-electric vertical take-off and landing (eVTOL) aircraft. The technology could facilitate explosive economic growth, bring down costs, and allow many more people to access the benefits of aviation. Morgan Stanley Research estimates that the eVTOL air taxi market could reach $1.5 trillion by 2040.

These new technologies and aircraft are also changing how we look at airports and what local leaders need to consider to stay competitive. Local airports are already enormous economic contributors to their surrounding communities, and that will only increase with eVTOL aircraft. This should bring pause to short-sighted community leaders trying to close places like Santa Monica Municipal Airport and Reid-Hillview Airport of Santa Clara County, both in California.

With so many new aircraft potentially entering the market needing places to charge, conduct maintenance, and escape weather, airports are set to be a crucial element of the eVTOL infrastructure.

And the residents of communities with local airports will also be more likely to realize the benefits that will go along with eVTOL and air taxis. While eVTOL aircraft can land virtually anywhere, the reality is that because of costs – as well as airspace and security restrictions – they will likely be heavily reliant on traditional airports for decades, if not longer. So, if you live near an airport, you'll be more likely to be able to utilize eVTOL aircraft.

Another added bonus is the noise, or lack thereof. Among the most frequent complaints airports receive are about noise, but eVTOL aircraft will be much quieter.

Opposition to an airport doesn't just rob local citizens of the existing benefits associated with airports, it prevents people from utilizing an emerging efficient mode of transportation that will transform our economy and how we get places.

Change and innovation are constants in aviation, but so are the benefits that come with access to aircraft and airports. It would be a mistake for leaders in towns across the country, and even in our industry, to ignore the potential of new technology and restrict the growth and services communities can benefit from. ❑

AOPA GREAT LAKES REGIONAL REPORT

Strength In Numbers Still Effective Tool In Winning Battles!

by Kyle Lewis
Regional Manager for Government Affairs & Airport Advocacy / Great Lakes / AOPA


Kyle Lewis

The old saying "Strength in Numbers" is still very valid. In mid-November 2018, a bill was introduced and put before the Transportation and Infrastructure Committee in the Michigan House of Representatives. This proposed legislation would have impacted private landing areas and flying clubs in a negative way. House Bill 6436, sponsored by Representative Jeff Yaroch (R-MI 33rd), set out to limit the number of operations on private landing areas to 10 operations per day. Remember that an operation is defined as a takeoff or a landing. The bill also has language that would change the definition of flying clubs from non-commercial aeronautical operations to commercial aeronautical operations. This is in direct conflict with FAA guidance and already established Michigan Aeronautics Code (259.91). *For reference, FAA Order 5190.6B, Chapter 10.6, defines flying clubs and their intended use.* AOPA is a strong supporter of the continued use and formation of flying clubs. AOPA is so enthused about flying clubs, we dedicate a segment of our "You Can Fly" program to the formation and consultation of flying clubs across the country.

As I prepared testimony for the hearing on the bill, AOPA reached out to flying clubs and other affected aeronautical users across the state to help oppose the bill. Back to my opening statement, the numbers made a presence at the hearing. Members of flying clubs, the Michigan Aerial Applicator Association, United States Parachute Association, AOPA, Recreational Aviation Foundation supporters, and representatives of Cameron Balloons were in attendance to oppose the bill. No one other than Representative Yaroch spoke in favor of the bill, and he faced many pointed questions by members of the committee. The representative referenced the legislation as a fix to land usage, but the bill would have affected aeronautical users across the state. In very short order, the aviation community answered the call to action and had their voices heard.

I hope you are asking yourself what detrimental issue precipitated the proposed legislation…what problem caused this? The specific issue trying to be resolved here is mitigating complaints of a skydive operation located in Ray Township, near Romeo, Michigan. The skydive operation utilizes a private landing area that has been in existence since World War II. Midwest Freefall operates as a skydiving club, evoking Rep. Yaroch to lump all flying clubs into language of the bill, since he cannot single out one skydiving club. Midwest Freefall has been involved in past litigation, which resulted in a favorable decision, and a review by the FAA and MIDOT Aeronautics gave the operation a clean bill to operate as is.

The bill did not fare well in the hearing. There was no obvious support from any committee members. In fact, Rep. Leslie Love (D-MI 10th) is a fan of skydiving, and she made it known through her questioning that limiting certain types of operations could have negative impacts across the state. Other committee members asked if this should be handled at the local level, to which Rep. Yaroch had no strong answer. The bill has yet to have any action taken by the committee, so at this time, the bill was expected to die in committee at the end of 2018. It is a possibility that another version will be introduced sometime in 2019 when the House reconvenes.

For further reading and access to the archived video of the hearing, visit the following link: http://legislature.mi.gov/doc.aspx?2018-HB-6436

As 2018 ended, all seven (7) of AOPA's Regional Managers were able to meet at AOPA headquarters in Frederick, Maryland for the annual Airport Support Network Board of Advisors meeting. This group helps AOPA focus our resources for the ASN Volunteer program, and this year we have been tasked with recruiting efforts. When I say we, it is not just the Advisors or AOPA staff, but every current ASN should be promoting and recruiting other members to participate in this important role.

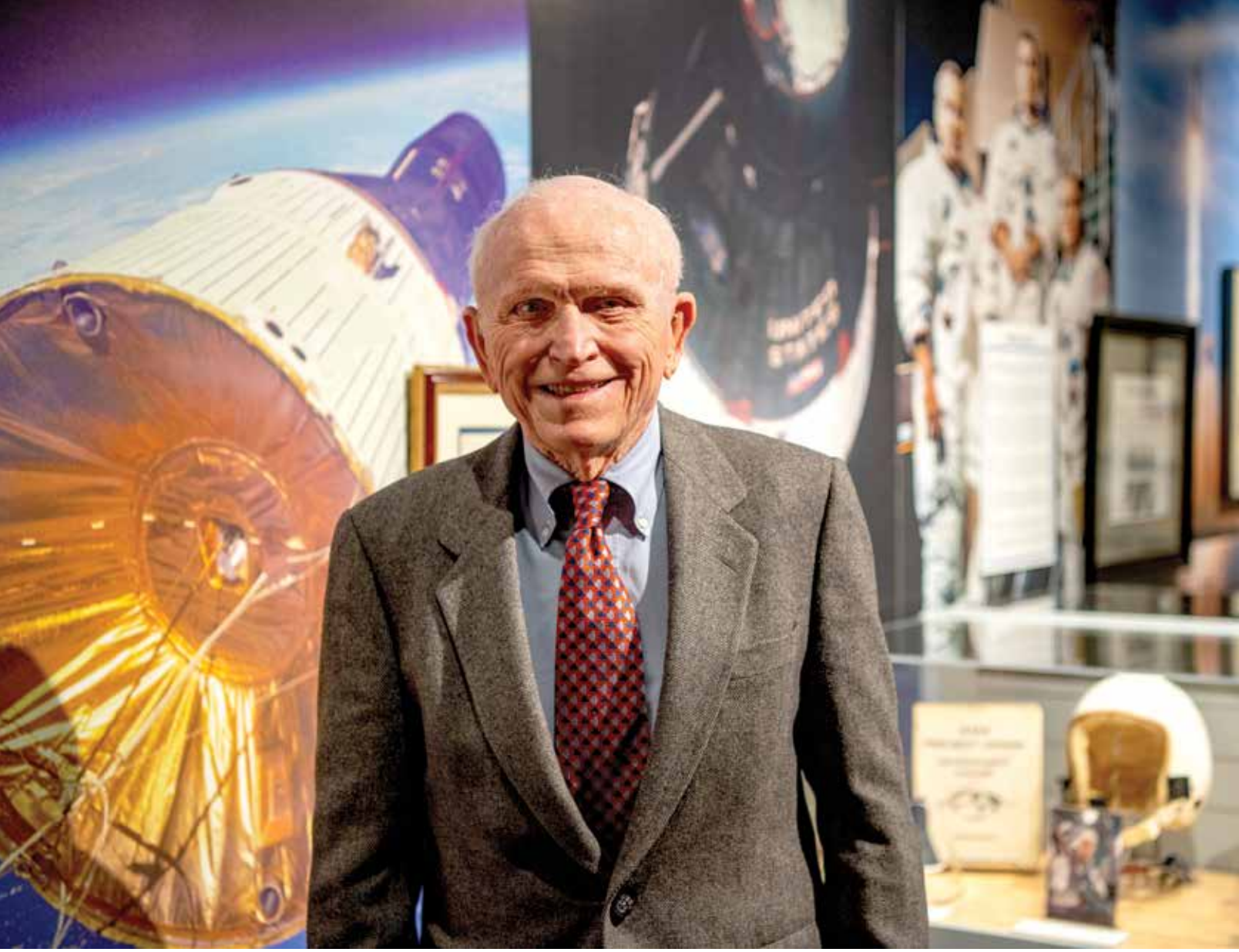
AOPA's airport advocacy work cannot be completed without devout volunteers at airports across the country. At EAA AirVenture, over 150 ASN Volunteers attended the ASN Meet and Greet held at the AOPA Pavilion. This was a record turnout for the event. Another exciting announcement is the roll-out of the redesigned website for the ASN Program. AOPA's IT staff have been working on the project for nearly a year, and the mobile ready webpage should be unveiled at some point in 2019.

Looking further ahead in 2019, I will be representing AOPA at the North Dakota Aviation Conference and State Legislative Day to be held March 6th, and the South Dakota Aviation Conference later that month. In May of 2019, AOPA staff will be a part of Powder River Council 3. This gathering of aviation stakeholders to include AOPA, NBAA, airports across Wyoming, Montana, North Dakota, and South Dakota, FBOs and other operators will convene in Bismarck to discuss the Powder River SUA operations with FAA and Air Force officials. As the meetings have progressed over the last three years, discussions are now focused on solutions for timely notification of airspace usage. Airlines will also be represented this year, as a result of the airspace now reaching Flight Level 50 and above.

It is always a privilege to be able to communicate my work with you, and as always, please do not hesitate to contact me with questions or concerns (kyle.lewis@aopa.org). ❑

2019 AOPA Fly-Ins

May 10 and 11 at AOPA's headquarters in Frederick, Maryland, at Frederick Municipal Airport.
June 21 and 22 in Livermore, California, at Livermore Municipal Airport
September 13 and 14 in Tullahoma, Tennessee, at Tullahoma Regional Airport



Apollo 8 Commander Frank Borman with his collection of memorabilia and photographs on display at the EAA Aviation Museum.
EAA Photo

The Wright Brothers Memorial Banquet & The Borman Collection

by Dave Weiman

The EAA Aviation Museum in Oshkosh, Wis., has opened *"The Borman Collection: An EAA Member's Space Odyssey,"* an exhibit that features the personal archives and memorabilia of astronaut Frank Borman, who was on the leading edge of America's space program through the 1960s. The new exhibit was formally opened with a ribbon cutting by Borman on Friday, December 7, 2018, just prior to EAA's annual Wright Brothers Memorial Banquet at which Borman was the featured speaker.

EAA Chief Executive Officer and Chairman of the Board, Jack Pelton, led the ribbon cutting ceremony with Frank Borman prior to the banquet, introduced him at the banquet, and welcomed the 796 guests who attended.

EAA received the collection last spring when Borman donated it to the association, of which he is a lifetime member. The personal archives contain hundreds of artifacts, including items carried aboard space capsules, awards received for his accomplishments, and correspondence with world leaders, celebrities, and other notable figures. "The Borman Collection" also highlights Borman's aviation career, which included U.S. Air Force service prior to NASA.

"I have a long relationship with EAA and have the greatest respect for what they do," said Borman, when asked why he chose to donate his collection to the EAA Museum. "I believe they are responsible for preserving general aviation and our ability to fly. It means so much to me for this collection to be here and that others will enjoy it."

EAA Aviation Museum Director Bob Campbell said

that the Borman Collection is one of the most noteworthy donations ever received by the museum. "We are honored that Col. Borman chose EAA to permanently display his personal artifacts from his aviation and space experiences. This is a part of unmatched American history that people will now be able to enjoy in perpetuity here at EAA."

Borman is best known as the commander of the famed Apollo 8 mission, which in December 1968 was the first manned spacecraft to orbit the Moon. The three astronauts aboard – Borman, Jim Lovell, and William Anders – orbited the Moon not once, but 10 times, and made hundreds of observations and notations that became the foundation for the Apollo Moon landings that followed. The memorable flight was noted for unforgettable moments, such as the famed "Earthrise" photo and the crew reading from the Book of Genesis while orbiting the Moon on Christmas Eve.

The crew of Apollo 8 as they appeared in 1968.
NASA Photo

Frank Borman was born on March 14, 1928 in Gary, Indiana. Because he suffered from numerous sinus problems, his father moved the family to Tucson, Arizona, which Borman considers his hometown. His interest in aviation started by building model airplanes. Also, when he was a kid, he got a ride in a Waco out of a farmer's field for $10, and started flying at the age of 15. He went on to become a fighter pilot, test pilot, an educator, an astronaut, and eventually an executive with Eastern Air Lines.

Borman graduated from the United States Military Academy at West Point in 1950 with a Bachelor of Science Degree. Upon graduation, Borman became a career Air Force officer. He received his pilot wings in 1951 and was a fighter pilot with the 44th Fighter Bomber Squadron in the Philippine Islands from 1951 to 1953, and as an operational pilot and flight instructor in various squadrons in the U.S., from 1953 until 1956. Most of his flying was in the F-80, F-84, swept wing F-84F and T-33. His flight commander was Charles E. McGee, who was a Tuskegee Airman during World War II.

Borman received his Master of Science Degree in Aeronautical Engineering from the California Institute of Technology in 1957.

From 1957 to 1960, Borman became an assistant professor

EAA Chief Executive Officer and Chairman of the Board, Jack Pelton, led the ribbon cutting ceremony for the new Borman exhibit at the EAA Aviation Museum prior to EAA's annual Wright Brothers Memorial Banquet. *Dave Weiman Photo*

Frank Borman cuts the ribbon to "The Borman Collection: An EAA Member's Space Odyssey" exhibit. *Peggy Weiman Photo*

Frank Borman being interviewed by Dave Weiman of *Midwest Flyer Magazine.* *Peggy Weiman Photo*

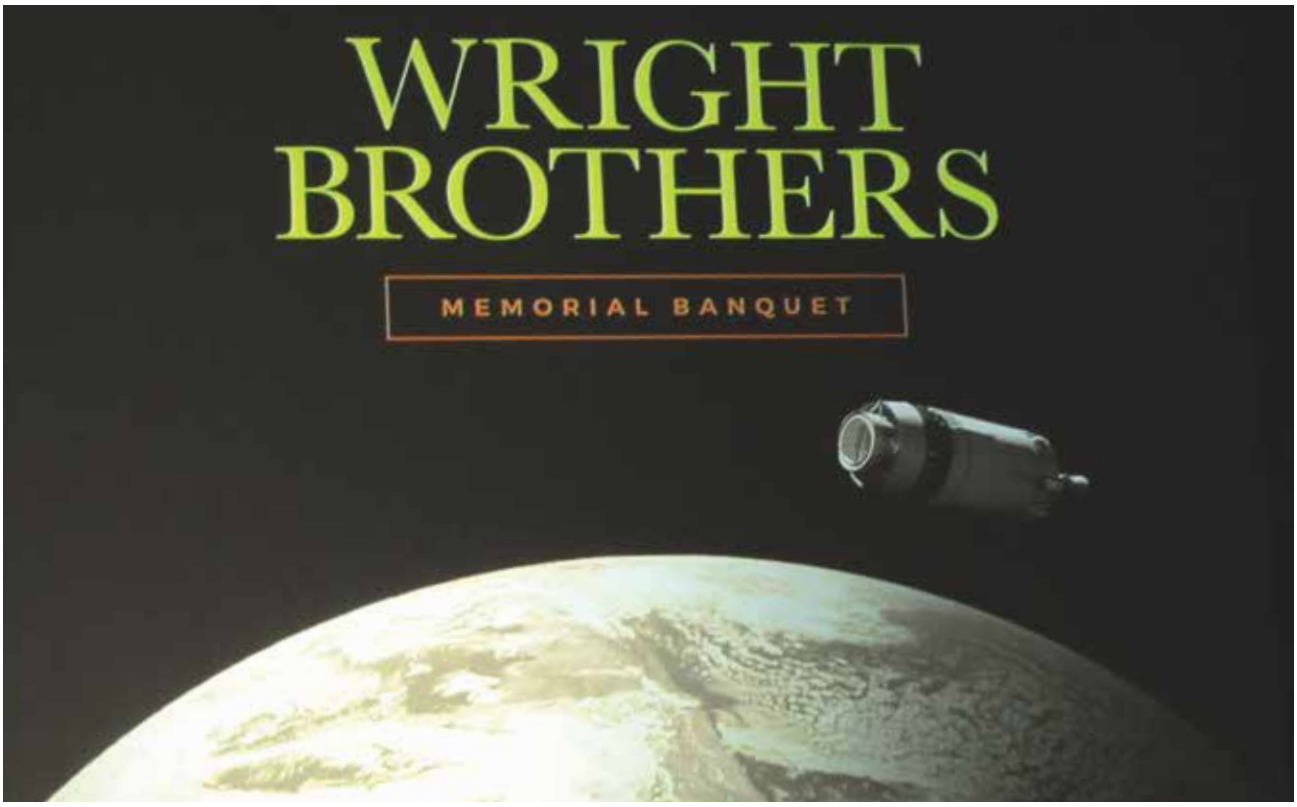
of thermodynamics and fluid mechanics at West Point at the request of his superiors, but he never lost his desire to fly. From 1960 to 1962, he became a test pilot engaged in organizing and administering special projects for the Air Force Aerospace Research Pilot School, and went to work for Chuck Yeager at Edwards Air Force Base flying the F-104. When Yeager attempted to fly higher than 90,000 feet, he crashed and that was the end of that program.

Borman was selected by NASA for its second astronaut group in 1962. He was backup command pilot for Gemini 4 and was chosen as the command pilot for Gemini 7, which launched in December 1965 with pilot James Lovell. This was a long-endurance flight which set a 14-day/330-hour record, and also acted as the target vehicle in the first space rendezvous performed by Gemini 6A. The two spacecraft came within one foot of each other, and they took turns flying around each other.

Borman was selected in late 1966 to command the third manned Apollo mission, planned as an elliptical medium Earth orbit test of the second manned Lunar Module (LM) on the first manned launch of the Saturn V lunar rocket in 1967 or early 1968. However, in January 1967, the crew of the first manned Apollo mission (Apollo 1) was killed in a fire aboard their Command Module on the launch pad, delaying the Apollo program. Borman was the only astronaut to serve on the review board of that accident, and was able to convince Congress that Apollo would be safe again.

Borman was then reassigned to his LM test mission, planned to fly as Apollo 9 in early 1969 after a first low Earth orbit flight commanded by James McDivitt in December 1968. But the LM was not ready, leading NASA to replace Borman's mission with a lunar orbit flight using just the Command/Service Module as Apollo 8 in December, making McDivitt's flight Apollo 9 in March 1969.

Borman's Lunar Module pilot and spacecraft systems



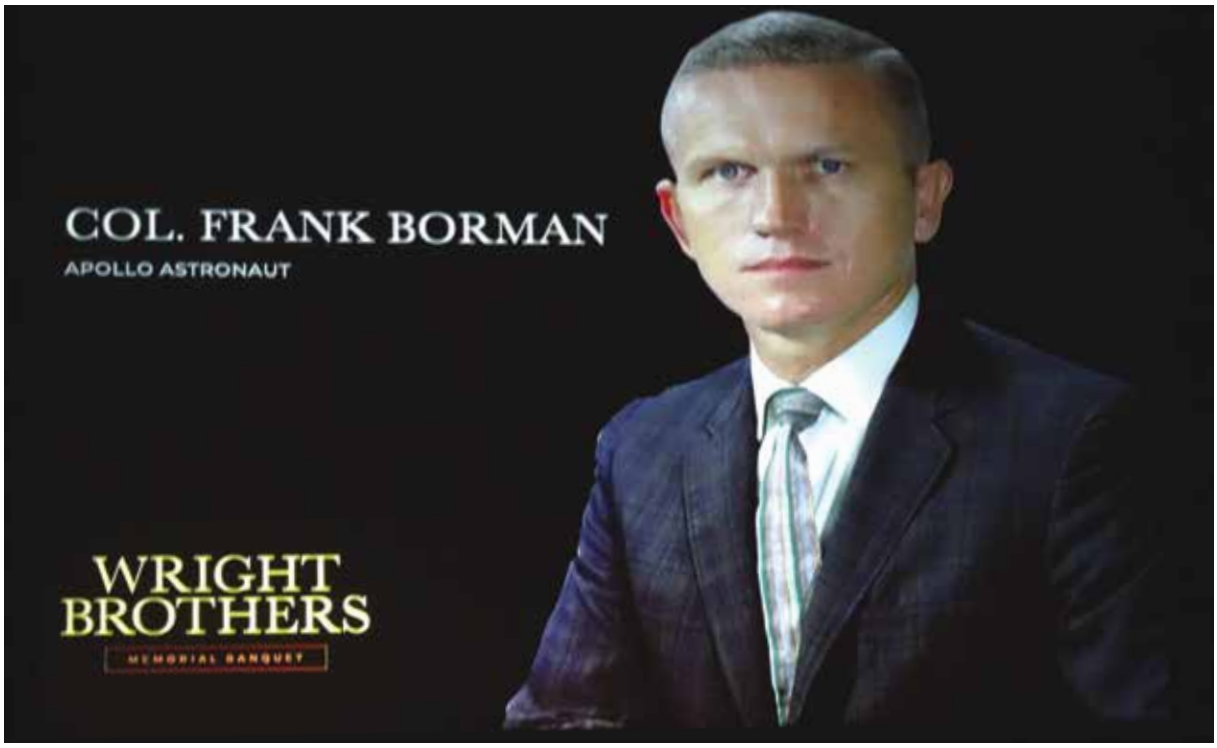
The famed "Earthrise" photo taken by astronaut William Anders on Apollo 8 was projected on the screen during EAA's Wright Brothers Memorial Banquet.

engineer was William Anders. The Command Module pilot and navigator, Michael Collins, needed to have back surgery and was replaced by his backup, James Lovell, reuniting Borman with his Gemini 7 crewmember. Apollo 8 went into lunar orbit on December 24, 1968 and made 10 orbits of the Moon in 20 hours before returning to Earth.

In the years that followed, Borman served as a special presidential ambassador on trips throughout the Far East and Europe. In 1970, he undertook another special presidential mission, a worldwide tour to seek support for the release of American prisoners of war held by North Vietnam. He completed the Harvard Business School's Advanced Management program that same year, which laid the foundation for his future in business.

Following his career with NASA, Borman became a special advisor to Eastern Air Lines in 1969, and after retiring as a colonel in the Air Force in 1970, he became senior vice president-operations group for the airline. He was promoted to the position of executive vice president-general operations manager, elected to the board of directors in 1974, and president and chief operating officer in 1975. He became chairman of the board in 1976 and retired from Eastern Air Lines in 1986, at which time he and his wife, Susan, moved to Las Cruces, New Mexico. The Bormans have two sons, Frederick and Edwin, and four grandchildren.

During the press conference immediately following the ribbon cutting ceremony to The Borman Collection, I asked



Col. Borman what it was like sitting in the Command/Service Module as Apollo 8 readied for takeoff with the engines rumbling, knowing that it would be a two-week journey to the Moon and back.

"All I thought about was the mission," said Borman. "I didn't want to make a mistake on our first mission (to the Moon). Our mission was to make 10 orbits and come home!"

When asked if he would have rather been an airline pilot than an airline executive, Borman said he liked being the President and CEO of Eastern Air Lines, and not once flew an airliner during the 17 years he worked there.

When asked if he had any general aviation flying experience, other than taking flying lessons as a teenager, he said "My wife and I restored a number of antique airplanes over the years. We flew a P-51 Mustang for many years in airshows. I much prefer airplanes to spacecraft." Borman's P-51 and P-63 once won Grand Champion at EAA AirVenture Oshkosh.

When asked by a reporter what he thought of plans to colonize Mars one day, Borman remarked that he doesn't think that's practical…that conditions on Mars are uninhabitable. He would rather see man return to the Moon and establish a research station, there.

Among the people Borman admires the most is former astronaut and Wisconsin native, Deke Slayton, one of the original NASA Mercury Seven astronauts, who became NASA's first Chief of the Astronaut Office when he was grounded for medical reasons. Borman also has great respect for fellow astronaut James Lovell, and James Edwin Webb, who served as the second administrator of NASA from February 14, 1961 to October 7, 1968. "Jim helped us get to the Moon because he held off Congress from investigating the fire incident. The Russians were right behind us, so NASA moved up the missions to beat them."

EAA Director and retired NASA astronaut, Colonel Charlie Precourt, interviewed Borman at the banquet. Astronaut James Lovell had also planned to participate, but had to cancel at the last minute due to health concerns. Precourt flew four missions with the Space Shuttle program and is currently a vice president and general manager with ATK Aerospace Group, a NASA contractor that manufactures key safety components for spacecraft (i.e. Orion). Precourt also built a VariEze for his personal enjoyment.

This year's banquet not only celebrated the 115th anniversary of the Wright brothers' first successful flight that occurred at Kitty Hawk, North Carolina in 1903, but also the 50th anniversary of the Apollo 8 mission. The Wright brothers forever changed how we look at the sky; the Apollo 8 mission forever changed how we look at what was beyond.

"The Borman Collection" is located on the EAA Aviation Museum's main floor, near the iconic Wright Flyer replica. It is accessible to all museum visitors as part of the regular admission.

The EAA Aviation Museum is located next to Wittman Regional Airport (KOSH), and Interstate 41 at the Highway 44 exit in Oshkosh, Wisconsin. It is open daily from 10:00 a.m. to 5:00 p.m. EAA members receive free museum admission year-round. For more information, call the EAA Aviation Museum at (920) 426-6108 or visit www.eaa.org/museum.

"Exploration is really the essence of the human spirit."
FRANK BORMAN

U-2 Spy Plane Memorial Honors Wisconsin Pilot

The Lockheed U-2 Capt. Edward Beaumont was flying when he suffered a catatonic seizure and crash landed unconscious on January 31, 1980.

On January 31, 1980, U.S. Air Force pilot, Captain Edward I. Beaumont of Brantwood, Wisconsin, was on a training flight flying the U-2 Spy Plane near Oroville, California. He was in the early stages of check-out at Beale Air Force Base, having made his first trip in the U-2CT only nine days earlier. This day, he was flying one of the last single-seat U-2C models remaining in Air Force service (they were retired a few months later).

Capt. Beaumont performed a number of touch-and-go's, and then climbed out for some work at

medium altitude. After this, he reported descending through 14,000 feet. Sometime later, his mobile control officer on the ground at Beale was surprised to hear Beaumont key the microphone, but make no transmission. Instead, all that could be heard was a heavy breathing sound as the U-2 pilot's transmitter remained open, but silent. The tower was alerted, and a T-37 trainer that was also flying locally, was instructed to rendezvous with the errant U-2 and try to attract Beaumont's attention.


U.S. Air Force pilot, Captain Edward I. Beaumont.

As the two pilots in the T-37 drew alongside, they could hardly believe their eyes. Capt. Beaumont appeared to be slumped at the controls, with the aircraft in a gentle, turning descent. Beaumont had had a catatonic seizure, and was completely unconscious. With the accompanying pilots in the T-37 powerless to intervene, the U-2 floated slowly towards the Sierra foothills north of Oroville. As it neared the sloping ground, some high-voltage power transmission lines barred the way. The T-37 pilots braced themselves for a searing explosion as the black airframe flew into the 230,000-kilovolt wires. The explosion never came.

Incredibly, the U-2 clipped the bottom two wires with a wingtip, but failed to incinerate. In fact, the contact with the powerlines had the effect of rolling the aircraft into the correct attitude for a forced landing in an adjacent cow pasture. Had its wingtip not been flipped up in this way, the aircraft would have cartwheeled as it impacted the gently sloping terrain with one wing low. As the astonished T-37 pilots orbited overhead, the U-2 flopped into the muddy field and ground to a halt with the engine still running. Fuel began spilling from a ruptured tank, but it ran downhill and therefore failed to ignite.

The sudden jolt of hitting the ground revived Captain Beaumont, and although confused, he managed to shut the engine down. But the drama wasn't yet over. As the still-groggy Beaumont began to extricate himself from the aircraft, his foot slipped and got caught in the D-ring of the ejection seat, which he had failed to make safe. It fired through the canopy, flinging him upwards with it. Captain Beaumont's body did a somersault, but he landed on his feet to one side of the aircraft, while the seat thudded into the ground nearby. His only injury was a chipped tooth!

When the preliminary accident report was circulated, Strategic Air Command generals and Lockheed managers alike thought that someone had made up the whole story as a joke. Not surprisingly, Captain Beaumont was scrubbed from the U-2 program on medical grounds.The U-2C he was flying is now mounted on a pylon at Beale Air Force Base in Marysville, Calif., and Captain Beaumont, 71, is back living in his hometown of Brantwood, Wisconsin.

About the U-2 Spy Plane

The first flight of the U-2 occurred at Groom Lake (Area 51) on August 1, 1955, during what was only intended to be a high-speed taxi run. The sailplane-like wings were so efficient that the aircraft jumped into the air at 70 knots (81 mph); the aircraft entered service in 1957.

U-2D s/n 56-6714 was one of 86 aircraft built by Lockheed Corp in Burbank, Calif. It was originally built as a U-2A and was subsequently modified to U-2B, then U2C and finally U-2D.

The Lockheed U-2 "Dragon Lady" is a single-seat, single-engine, very high-altitude reconnaissance aircraft operated by the U.S. Air Force (USAF) and previously flown by the Central Intelligence Agency (CIA). It provides day and night, very high-altitude (70,000 feet), all-weather intelligence gathering. The aircraft is also used for electronic sensor research and development, satellite calibration, and satellite data validation.

The U-2 has an empty weight of 14,300 lbs. and a maximum gross weight of 40,000 lbs. Maximum speed is 500 mph; its cruise speed is 429 mph. The aircraft has a range of 6,405 miles, a maximum ceiling of 70,000 feet, and can climb at 15,000 feet per minute. ❑

(L/R) Jack Elliott Schapiro flying in the 1968 Piper Arrow he bought new. Flying with him is his daughter Amy Schapiro, grandson Hudson Schapiro and son Stephen Schapiro at the controls.

(L/R) Jack Elliott Schapiro with his son, Stephen Schapiro, in the Commemorative Air Force B-29 "FiFi."

Writer of Longest-Ever Running Aviation Column In A Mainstream Newspaper Dies At 94

Aviation columnist, Jack Elliott Schapiro, of Warren, N.J., passed away November 20, 2018 at the age of 94. Known professionally and in the aviation community by his pen name, Jack Elliott, he is best known for writing *Wings Over Jersey,* a column in New Jersey's largest newspaper, the Newark *Star-Ledger.*

Wings Over Jersey appeared each Sunday for 38 ½ years, from June 9, 1963 through December 30, 2001. It is thought to be the longest running general aviation column in a mainstream publication ever. He wrote his last column on December 30, 2001 (https://www.eaa501.org/elliott.gif).

In 2008, Elliott published a book entitled *"Adventures in Flying,"* which is a compilation of his most compelling columns.

Born in Bayonne, N.J. on January 23, 1924, to Anna and Sam Schapiro, Elliott lived in Brooklyn, New York before his family moved to New Jersey around the age of 5. He grew up in Bloomfield, N.J. and for the past 50 years, he resided in Warren Township, N.J.

Elliott was a World War II veteran, having served in the United States Army 83rd Chemical Mortar Battalion in Africa, Italy, and France. He fought at Anzio, Italy – an amphibious assault in January 1944 conceived by Winston Churchill that was a precursor to the D-Day invasion at Normandy six months later. He was part of the liberation of Rome in June 1944 and then flew into Southern France in the back of a Waco CG-4 glider.

After the war, Elliott went to New York University and began his journalism career as a cub reporter at the *Long Island Press* before joining the *Star-Ledger,* working his way up to the position of Sunday Editor. After leaving the *Star-Ledger,* Elliott embarked on a career in aviation public relations while continuing to write *Wings Over Jersey,* as well as freelance articles. His articles appeared in several aviation publications, including *AOPA Pilot, Air-List Ads, Airport Journals, Aviation International News, Flying* magazine, *General Aviation News, Private Pilot* magazine, *EAA Sport Aviation* magazine, and *Midwest Flyer Magazine,* among others. The last aviation article Elliott wrote was on the 2011 AOPA Expo in Hartford, Connecticut for *Midwest Flyer Magazine* (https://midwestflyer.com/?p=3651).

Over the years, Elliott won numerous awards for his writing from national and local aviation associations, and in 1986, he was inducted into the Aviation Hall of Fame of New Jersey.

Elliott's fascination with aviation began in 1933 when he took his first flight as a 9-year-old in an open cockpit New Standard biplane with his father and brother. He earned his private pilot certificate in 1954, and his commercial pilot certificate with instrument, glider and single-engine seaplane ratings after that.

Elliott owned three airplanes during his lifetime: two Stinson 108s and most notably a 1968 Piper Cherokee Arrow, which he purchased new from the factory in Vero Beach, Florida. His son, Stephen, now owns and flies the Arrow.

Dave Weiman of *Midwest Flyer Magazine* remembers Elliott as a gutsy and engaging reporter, no one could help but love.

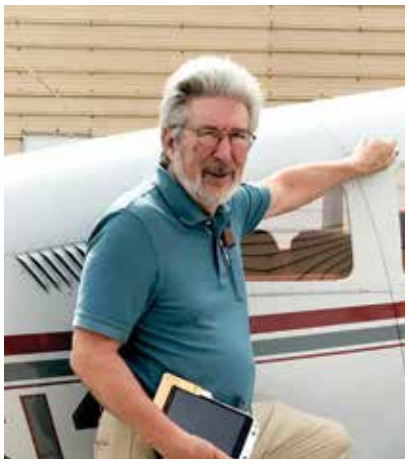
"Once when the AOPA Expo was held in Long Beach, California, and the evening party was on the Queen Mary, Elliott got up from our table, only to return with the first commercial astronaut, Mike Melvill and his wife, Sally, of Burt Rutan's space-age company, Scaled Composites." (On June 21, 2004, Melvill piloted SpaceShipOne on its first flight past the edge of space or Flight 15P.)

"No pilot was too important for Jack to start up a conversation and turn it into a full-blown interview," said Weiman. "His love of aviation and aviation people was genuine, and this was apparent in everything he wrote."

A stroke in 2011 left Elliott with aphasia, but he worked hard at regaining his ability to speak.

Elliott leaves behind his wife of 49 years, Esta-Ann Schapiro; his two children, Amy and Stephen Schapiro; and his grandson, Hudson Schapiro, 6, who he inspired to one day become a pilot. ❑

GA Pilot Fills Niche In Providing Aircraft Owners With Remote Cell Phone Systems



Carl Bumpurs prepares to visit clients using his Piper PA28-181 Archer II.

FST LLC manufactures several models of remote cell phone systems.

If you have a preheater in your aircraft, you probably have a need for some sort of remote cell phone system you can call to turn it on the night before you go flying in the wintertime. One distributor of this equipment is mechanical engineer and general aviation pilot, Carl Bumpurs of Racine, Wisconsin.

A native of North Texas, Carl studied mechanical technology at Oklahoma State University in Stillwater, Oklahoma, and received valuable training in early digital automation technology while employed at Texas Instruments (TI) at their semi-conductor plant in Dallas, Texas.

Carl then spent two years as a Peace Corps volunteer in West Africa (Republics of Guinea and Gabon) training local mechanics in maintenance and the repair of American-made construction equipment. Following the Peace Corps, he enlisted in the U.S. Navy Seabees and was deployed to Vietnam as a construction equipment mechanic. Following Vietnam, he returned to the Peace Corps, serving as deputy director in the Republics of Guinea and Zaire supervising skilled trades programs.

Upon returning to the U.S., Carl joined the International Division of J.I. Case. During his 11 years with the company, he served as regional manager for North Africa, residing in Tunis, Tunisia for three years, and after a four-year stint at the company's headquarters in Racine, he spent another three years as regional manager for Egypt, Sudan and Lebanon, residing in Cairo, Egypt. It was during this period in 1976, while on annual leave in the U.S., that Carl earned his private pilot certificate.

On returning to the U.S., Carl joined a start-up company as a product development engineer and helped develop a successful line of industrial floor scrubbers and sweepers. Carl then joined DeltaHawk, a startup company developing a diesel aircraft engine. He worked there as an engineering technician until retirement.

After casting about for opportunities, Carl decided that general aviation needed a reliable, well-supported remote aircraft preheater system. The actual catalyst in developing the system was the fact that he was the member of a five-person flying club who lived the closest to the airport (John H. Batten Airport in Racine, Wis., KRAC), and would occasionally be asked to plug in the preheater for others. Acclimated to much warmer climates than the cold Midwest, Carl decided that there must be a better way and engineered a remote cell phone system, and founded FST LLC in 2010, and sold its first equipment later that year.

"We placed test units with selected individuals in late 2009 and the products proved reliable," said Carl. "With some additional tweaking and development of an iPhone app to simplify the user interface, we had the product that is still being marketed today with only minor changes. Different models were developed to serve distinct market sectors – differentiation based primarily on switching capacity (wattage) and the resulting cost of manufacturing.

"The product is reliable, simple to use and fully supported by FST LLC, including cell service," said Carl. Some manufacturers make the owner keep track of cell phone usage and it really gets to be a headache for most people. FST LLC is truly a one-stop source for remote switches and related service and tech support. Products are warranted with a one-year, no-nonsense guarantee and free online, text and phone support for the life of the product. Market acceptance has also been augmented through exposure by AOPA Live, Aviation Consumer and sales through Aircraft Spruce.

Combining his skill as a technician with flying has been a dream come true for Carl, who went on to earned his Instrument Rating in 1999, and has owned a number of Piper and Mooney aircraft over the last 30 years. He currently owns and flies a Piper PA28-181 Archer II as a member of a flying club.

For additional information on FST LLC, contact Carl Bumpurs at 262-412-7580, or via email at carl.fstllc@att.net, and visit their website: www.fstllc.com/ ❑

Antique Airfield (IA27), Blakesburg, Iowa.
Matt McVicker Photo

The First HARAAH
"Historic Airfield Rally to the Antique Airfield Homecoming"

by Paul Berge
AAA National Director

The Antique Airplane Association (AAA), and the Air Power Museum (APM), are calling on owners of pre-1941 airplanes (certified or homebuilt design) to participate in the inaugural "Historic Airfield Rally to the Antique Airfield Homecoming," forever after to be known as HARAAH.

Since 1953, AAA has worked to "Keep The Antiques Flying." In 2008, for instance, AAA/APM achieved great success during its invitational fly-in at their headquarters at Antique Airfield (IA27) near Blakesburg, Iowa, by hosting "Air Mail Days." Not only did airplanes that once flew the Air Mail attend, but AAA-member crews were sworn in by

AAA Fly-In
Matt McVicker Photo

the United States Postal Service to actually fly the mail in 17 antique/classic airplanes. In 2019, HARAAH will build on this tradition of experiencing historical flight as it really happened…or nearly so.

Between August 28 and September 2, 2019 (Labor Day Weekend), up to 25 pre-registered crews will fly antique/classic aircraft from all over the United States to rendezvous with hundreds of other antique and classic aircraft at famed Antique Airfield. Along the way, these emissaries of aviation's storied past are being encouraged to stop at airfields of historic significance. Examples include, but are not limited to, former aircraft manufacturing sites, such as Lock Haven, Pennsylvania (KLHV), onetime home to Piper Aircraft; and Iowa City, Iowa (KIOW), which was a stop along the transcontinental Air Mail route. Former military bases, such as Sweetwater, Texas (KSWW) and Ottumwa, Iowa (KOTM) are likely stops, as are private aerodromes with historic roots, such as Koerner Field outside Kankakee, Illinois (3KK). And airfields with aviation museums housing historic airplanes, such as First Flight at Kitty Hawk, North Carolina (KFFA) or Mid America Flight Museum in Mt. Pleasant, Texas (KOSA). The point is, AAA/APM not only want to keep the antiques flying, but also the airfields they once used. The organization wants to bring attention to these historic aerodromes, and in doing so, help keep them open. Speaking of open, AAA/APM says they are open to more suggestions. What's your favorite historic airport?

How it works: AAA members with appropriate aircraft who wish to participate must register in advance, as well as let AAA/APM know the route and airports they plan to include. Up to 25 aircraft will be designated as official entrants and issued commemorative logbooks in which to record – and later share – their journeys to the 2019 AAA/APM Invitational Fly-In.

If you don't plan to register as one of the 25 entrants, but still want to fly the routes, great! Anyone, in any aircraft, is welcome to fly the same routes and visit the same historically significant airports enroute to Antique Airfield.

Visitors to the annual fly-in at Blakesburg must be AAA members, but that's an easily achieved item by going to www.antiqueairfield.com to join and register to attend the 2019 Labor Day Weekend AAA/APM Invitational Fly-In, where aviation history is alive and flying!

More details will follow, including a listing of possible stops, but anyone interested in participating, as pilot or sponsor, in the first-ever HARAAH, are urged to contact Brent Taylor by email at AntiqueAirfield@sirisonline.com, phone (641) 938-2773 or mail: AAA Headquarters, 22001 Bluegrass Rd., Ottumwa, Iowa. ❑

Second Arsenal of Democracy To Take Flight In 2020

WASHINGTON, DC – The Arsenal of Democracy Executive Planning Committee has announced that it is planning a second Arsenal of Democracy Flyover that will take place on Friday, May 8, 2020, to commemorate the 75th anniversary of the end of World War II (WWII) in Europe and in the Pacific.

As part of a thrilling two-day celebration in the nation's capital, the flyover will coincide with a ceremony for veterans at the National World War II Memorial, and will consist of a vast assortment of U.S. and Allied WWII aircraft flying overhead in 24 separate historically sequenced warbird formations. The formations will represent the war's major battles, from the Battle of Britain through the final air assault on Japan, and conclude with a missing man formation.

Nearly 100 vintage warbirds of various types are expected to participate. Aircraft are being provided by multiple organizations and individuals whose mission is to preserve these historic artifacts in flying condition. These organizations include the largest vintage military aircraft organization – the Commemorative Air Force (CAF) – providing fighter, bomber and transport aircraft. Additionally, organizations such as the Dakota Territory Air Museum, will provide historical aircraft to include the P-40 Warhawk, P-39 Airacobra, P-38 Lightning, P-51 Mustang, P-47 Thunderbolt, F4U Corsair, B-25 Mitchell, B-17 Flying Fortress, Lancaster, Spitfire, Hurricane and many others.

On the day of the flyover, the Dwight D. Eisenhower Memorial Commission will dedicate the Dwight D. Eisenhower National Memorial, which is being constructed directly across from the Smithsonian's National Air and Space Museum, adjacent to Independence Avenue, S.W. The memorial will honor Dwight Eisenhower as the 34th president of the United States and as Supreme Commander of Allied Forces during WWII, recognizing Eisenhower as the last military general to serve as President of the United States, and one who led the Allied Forces to victory in Europe. Among the many combat veteran WWII aircraft participating, a special formation of C-47 aircraft will fly over the new memorial, led by the C-47 'That's All Brother,' which was the actual transport to first drop paratroopers during the Normandy invasion.

In addition to the flyover, Arsenal of Democracy events will include a gala dinner on Thursday, May 7, 2020, in historic Hangar 7 located at Ronald Reagan Washington National Airport. The dinner, which will pay tribute to WWII veterans, will feature combat heroes sharing their personal stories of experiences.

The Arsenal of Democracy Executive Planning Committee includes Pete Bunce, President and CEO of the General Aviation Manufacturers Association (GAMA); Hank Coates, President and CEO of the CAF; John Cudahy, President of the International Council of Air Shows (ICAS); Mike Ginter, Vice President of Airports and State Advocacy with the Aircraft Owners and Pilots Association (AOPA); and Paul Rinaldi, President of the National Air Traffic Controllers Association (NATCA).

More information about the Arsenal of Democracy Flyover is available at www.ww2flyover.org. The Arsenal of Democracy Flyover is a 501(c)3 entity.

The aircraft listed have agreed to participate in the flyover, but due to factors such as weather and mechanical issues, participating aircraft are subject to change without notice. ❑

NWOC Announces Strategic Partnership With D-Day Squadron

OXFORD, CT. – The National Warbird Operator Conference (NWOC) has announced a strategic partnership with the D-Day Squadron, offering the group the opportunity to make a presentation on their mission during the NWOC annual convention. Momentum is building for the D-Day Squadron as the vintage warbird community continues to rally around this unprecedented opportunity to return 19 flying restored C-47 and DC-3 (the civilian version of the C-47) aircraft across the North Atlantic in late May 2019 to take part in honoring the few remaining D-Day veterans who are still with us. "We are proud to support the efforts of the D-Day Squadron in bringing these historic aircraft back to where the history actually happened," declared Ann Marie Loos of NWOC.

Flying along the original route across the North Atlantic, which was used to ferry aircraft during the Second World War, the squadron will join with its European counterpart,

Daks over Normandy. These groups will create an aerial fleet to cross the English Channel on June 5th as well as participate in multiple events. Events will take place on June 2nd-5th at Duxford Airfield in the United Kingdom, and from June 5th-9th at Caen-Carpiquet Airport in Normandy, France.

"It is really great that the industry has come together to support us in a major way," said Moreno Aguiari, Executive Director of the D-Day Squadron. "Several companies have offered their support and expertise and we are really proud of this. I want to thank the NWOC management team for giving us the opportunity to present our mission and for facilitating our participation."

The D-Day Squadron is the part of the Tunison Foundation, a non-profit 501(c)(3) charitable organization. In June 2019, the D-Day Squadron will lead an American fleet of historic, restored C-47 World War II military aircraft in "Daks Over Normandy," a flyover of more than 30 international aircraft to drop 250 paratroopers over the original 1944 drop zones in Normandy, commemorating the 75th anniversary of D-Day. The event will honor the citizen soldiers of the war, whose bravery led the Allies to the liberation of France, and then to an end of the devastating war in Europe. The Squadron's education program takes the compelling story of the citizen soldier to audiences at airshows and events off the flightline to honor these brave Americans and ensure their memory and significance is appreciated for generations to come. The group's efforts are funded through the generous tax-deductible contributions of their supporters. Learn more at DDaySquadron.org.

Founded in 1993, the annual NWOC event brings together warbird owners, operators and museum directors to address particular events facing warbird owners and to discuss common goals related to the ever-changing economics, operations and regulations pertaining to flying ex-military aircraft (https://www.nwoc.aero/). ❑

Corporate Jet Mounted At Airport Entrance Symbolizes Impact GA Has Had On Community

WATERTOWN, WIS. – Earth-bound travelers entering Watertown's main southern entrance are now greeted by a beautiful Cessna Citation 500 mounted on top of a 21-foot pole. The Citation was purchased for its engines and then stripped of all valuable parts. The fuselage was donated by a longtime Watertown Airport user. Other individuals either donated funds or services to make the monument a reality.

A Cessna Citation symbolizes the impact general aviation has had on the local economy in Watertown, Wisconsin. *Wisconsin Aviation, Inc. Photo*

In addition to being a stunning visual "Welcome to Watertown" symbol to people driving into town, the Citation serves to mark the city's airport and symbolizes the impact general aviation has had to commerce in the community. It is also hoped that seeing the monument will spark imaginations and increased interest in aviation.

Watertown is one of three locations served by Wisconsin Aviation, Inc. Other locations include Dodge County Airport in Juneau, Wis., and Dane County Regional Airport in Madison, Wis. Jeff Baum is president and chief executive officer (www.WisconsinAviation.com). ❑

Yingling Aviation Continues Expansion, Adds Aircraft Paint Services

WICHITA, KAN. – Yingling Aviation has announced significant expansion to its current facilities at Wichita's Dwight D. Eisenhower National Airport. Construction on a new 23,000 square foot facility for aircraft avionics and maintenance has begun. In addition, the company is adding another 50,000 square feet of newly leased space consisting of a paint hangar, prep hangar, service, aircraft interiors, and office space. The paint hangar can accommodate up to a Hawker 800 mid-size jet. The additional expansion also includes parking and ramp area.

"We have completed an agreement to lease the facilities on the east runway (1R/19L) at Dwight D. Eisenhower National Airport located immediately north of our current facilities," said Lynn Nichols, CEO of the company. "Obviously this is logistically a great fit for our operations." The facilities were recently occupied by Hawker Beechcraft Services and vacated when Textron Aviation combined them with the Textron Aviation Service Center across the east runway in 2017.

"The opportunity for Yingling to offer aircraft paint services has long been on our list of new services to provide, so having these facilities, particularly next door, is a perfect situation for us. Adding paint will complement our interior, avionics and aircraft maintenance services. Generally speaking when customers have their aircraft painted, they often want avionics upgrades, interior refurbishment and timely maintenance items done at the same time. Adding these paint capabilities positions Yingling Aviation in the marketplace as a full-service MRO," Nichols continued.

"The newly-added 50,000 square foot facility will undergo a major facelift and renovation inside and outside over the next year. This will also result in Yingling adding more new jobs. We're continuing to add A & P mechanics and avionics technicians and now we'll be hiring aircraft painters, as well. We already have several customers lined up for aircraft paint work, so we will be off and running as soon as the facilities are ready," Nichols explained.

Yingling Aviation has been affiliated with Textron Aviation longer than any other entity, having been named the first Cessna sales and service dealer established in 1946. Its 100-plus Wichita-based employees are dedicated to serving customers. Yingling Aviation can be reached by calling 316-943-3246 or on the web at www.yinglingaviation.com. ❑

WAI Announces 2019 Pioneer Hall of Fame Inductees

Women in Aviation International (WAI) has selected the 2019 inductees for its International Pioneer Hall of Fame. These women will be honored at the 30th Annual International Women in Aviation Conference during an induction ceremony and celebration dinner at the Long Beach Convention Center on Saturday, March 16, 2019, from 6-8 p.m.

The 2019 Pioneer Hall of Fame inductees include Leanne Caret and Mary Golda Ross.

Leanne Caret is executive vice president of The Boeing Company and president and CEO of Boeing Defense, Space and Security. She is a member of the Boeing Executive Council. Throughout her career, Caret has engaged with industry, government and academic leaders on a wide range of topics and issues related to national defense. She has devoted considerable attention to STEM education and support for veterans and their families, and leadership excellence. She is executive champion for the Boeing Women in Leadership organization.

Mary Golda Ross was the first known native American female engineer, and the first female engineer in the history of Lockheed. She was one of the 40 founding engineers of the renowned and highly secretive Skunk Works project at Lockheed Corporation. She worked at Lockheed from 1942 until her retirement in 1973, where she was best remembered for her work on aerospace design, including the Agena Rocket program, as well as numerous design concepts for interplanetary space travel, manned and unmanned earth-orbiting flights, and the earliest studies of orbiting satellites for both defense and civilian purposes.

Continued On Page 59

Continental Announces Partnership With Liaoning Cub Aircraft Corp To Power The Experimental Top Cub

MOBILE, ALA. – Continental Motors Group Ltd. (CMG), an AVIC® International Holding (HK) LTD company (HKEX: 232.HK), announced December 4, 2018 that it has entered into a strategic partnership with Liaoning Cub Aircraft Corp to be the engine provider for the "Top Cub," the first kit aircraft built in China, for the Chinese market. The experimental Top Cub is based on the Part 23 certified Top Cub CC18-180, originally designed by CubCrafters and acquired by Top Cub Aircraft Inc., a subsidiary company of Liaoning, in 2015. The availability of the Top Cub as a kit aircraft, powered by a CMG Titan™ kit engine, marks the opening of the experimental market in China. Top Cub Aircraft and Continental® are the first companies to offer a complete aircraft in kit form, after the Chinese CAAC agreed to allow experimental building in China.

Wolfgang Qian, CEO of Liaoning Cub Aircraft Corp, said that the combination of the Titan™IO-360 engine with their airframe, offers the best power-to-weight ratio that they could hope for. The strategic partnership with Continental Motors Group allows Liaoning Cub Aircraft Corp to offer a highly reliable engine to its customers and to provide them with industry leading technical support. "We are convinced that the experimental market will expand rapidly in China," said Qian. "The capacity of CMG's local team to assist Top Cub builders with all the information related to the safe operation of the engine and its maintenance was crucial, as is their ability to stock the parts in China needed for scheduled maintenance."

The partnership with Continental Motors® materialized with the delivery of the first six engines, after the CAAC validated the experimental building rules. These Titan™ engines are destined to equip the first six experimental Top Cubs to be built in China by their owners.

The combined flexibility of the Top Cub two-seat airframe, and the 180/185 maximum horsepower of the Titan™ IO-360, its low weight of 270 lbs. dry, and its 2,000-hour time between overhaul (TBO) rating, makes it the ideal engine for flying in and out of the most rugged airfields, while cruising at high speed. ❑

Boeing Expands Digital Services Reach In Business Aircraft Market

ENGLEWOOD, COLO. – Boeing [NYSE: BA] subsidiary Jeppesen has announced it has reached a new five-year contract agreement to provide fractional business jet operator Swift Air with Jeppesen FliteDeck Pro services. These services feature real-time electronic flight bag (EFB) data capabilities that will enhance decision-making and increase operational efficiency. FliteDeck Pro provides airlines with relevant digital navigation and operational data to optimize all phases of flight. Swift Air will access FliteDeck Pro services on iPads where flight crews can customize how they view real-time, data-driven flight information per their preferences. For more information about Jeppesen FliteDeck Pro and the complete selection of mobile EFB services, visit www.jeppesen.com/mobile. ❑

Wisconsin Ultralight/Lightplane Advisory Council To Hold Safety Seminar

OSHKOSH, WIS. – The Wisconsin Ultralight/Lightplane Advisory Council (WULAC) will hold its 26th annual safety seminar on Saturday March 16, 2019 from 9:00 a.m. to 4:00 p.m. in the Founders Wing of the EAA Aviation Museum in Oshkosh, Wis. Pilots and other interested persons are encouraged to attend.

WULAC is made up of five volunteers whose sole purpose is hosting their annual safety seminar. WULAC is a nonprofit 501 C3 organization and donations from raffle ticket sales help raise the needed funds to keep the annual event going. For additional information visit www.av8safe.org. ❑

DuPage Airport Authority Earns National Budgeting Award

WEST CHICAGO, ILL. – The DuPage Airport Authority (DAA) has garnered national recognition for its 2018 budget. The Government Finance Officers Association (GFOA) recently honored DAA with a Distinguished Budget Presentation Award, representing the highest form of recognition in governmental budgeting. GFOA is a national professional association focused on advancing excellence in state and local government financial management.

"We are honored the national GFOA organization has chosen to recognize our budget planning and transparency," said Stephen Davis, chairman of the DAA. "DAA operates as a fiscally responsible organization, enabling us to continuously expand and innovate our first-class service customers have come to expect across each of our three business operations: the DuPage Airport, DuPage Business Center and Prairie Landing Golf Club."

DuPage County Board Chairman Dan Cronin introduced a resolution at a recent board meeting honoring and recognizing DAA for this prestigious accomplishment.

"DuPage Airport Authority is an internationally recognized airport and aviation facility serving all general aviation users," said Chairman Cronin. "We are proud of the authority's prudent fiscal management and congratulate them on this well-deserved honor."

According to the GFOA, DAA had to satisfy several nationally recognized guidelines for effective budget presentation in order to receive the award. These guidelines are designed to assess how well an entity's current budget serves as a policy document, financial plan, operations guide and communications device. Budget documents must be rated "proficient" in all four categories, as well as in the 14 mandatory criteria to receive the award.

DuPage Airport Authority (DAA), located just one hour from the heart of Chicago and within minutes of western Chicago's major commercial centers, is one of North America's premier business aviation facilities. Across all three entities – aviation, the business center and Prairie Landing Golf Course – DAA offers a superior airport and flight center, a championship golf course rated 4.5 out of 5 stars by Golf Digest, and a coveted business park. DAA is the only facility of its kind in Illinois with four active runways, two ILS approaches and a one million square foot apron. Spanning 7,571 feet long and 150 feet wide, Runway 2L/20R is the second longest runway in the Chicago area after O'Hare International Airport, and is capable of accommodating corporate aircraft including the Boeing Business Jet. To learn more, visit www.dupageairport.com. ❑

AOPA Air Safety Institute Releases Newest Accident Case Study

FREDERICK, MD – The Aircraft Owners and Pilots Association (AOPA) Air Safety Institute (ASI) released another episode in its popular Accident Case Study video series. The latest video details the plight of a low-time, non-instrument rated pilot choosing to press on in worsening weather. Those decisions often end badly, and this time it cost a family of five their lives.

In Accident Case Study: Blind over Bakersfield, the Air Safety Institute analyzes what may have compelled the non-instrument rated pilot to press on, and eventually accept an IFR clearance to fly into instrument meteorological conditions, a decision that clinched the fate of the five on board. Join the AOPA Air Safety Institute in examining the circumstances that led to the tragedy. To view the accident case study and video, visit ASI at www.airsafetyinstitute.org. ❑

Dedicated & Professional Staff Help FBO Maintain Tradition of Excellence!

by Dave Weiman

One of the oldest, continuously family-operated, full-service fixed base operations in Wisconsin, is Morey Airplane Company at Middleton Municipal Airport – Morey Field in Middleton, Wisconsin. Third generation Morey family member, Richard Morey, attributes his company's success to the foresight of his grandfather, Howard Morey, who founded the company and airport in 1942; to his father, Field Morey, who founded the company's nationally acclaimed instrument flight training program in 1980, and laid the groundwork to sell their private airport to the City of Middleton in 1998; and to the company's Midwest values of treating staff and customers with respect. Richard Morey is quick to credit his staff for their hard work, dedication and professionalism. "Without our staff, Morey Airplane Company would not be the success it is today," said Morey.

Morey Airplane Company has a staff of 18 flight instructors, aircraft technicians, charter pilots, aircraft fuelers and office personnel. Some employees have been with the company through all three generations, and are considered more like family than employees.

In 1958, Rollie Mack of Dane, Wis., was a full-time farmer, a private pilot and a recent airframe and powerplant school graduate when he stopped by the airport to apply for a job. Howard Morey was still managing the business at the time, and before Mack left the airport, he hired him to fuel aircraft and work in the shop. By the summer of 1960, Mack had earned his multi-engine and instrument ratings, and commercial and flight instructor pilot certificates, and began instructing and flying charter. After flying professionally for more than 20,000 hours, Mack now works full time in the shop. He is the recipient of the "Wright Brothers Master Pilot Award" for having practiced safe flight operations continuously for more than 50 years, and the "Charles Taylor Master Mechanic Award," recognizing his lifetime accomplishments as a senior aviation mechanic.

Harold Green of Madison, Wis., was a professor in engineering at the University of Wisconsin in Madison until retiring in 2002, and a longtime customer of Morey Airplane Company beginning in 1958. He was recruited by Field Morey to become an instrument and multi-engine flight instructor beginning in 1976, and has since become a mentor to other flight instructors. Green has approximately 11,000 hours of which 7,700 are in the right seat. He obtained all of his pilot certificates and ratings at Morey's, except for his Private Pilot Certificate. Green was named "Flight Instructor of the Year" by the Federal Aviation Administration in 2011 and is a recipient of the "Wright Brothers Master Pilot Award." In addition, Green has become a contributing editor for *Midwest Flyer Magazine* with his column "Pilot Proficiency."

Al Barger of Poynette, Wis., has worked in Morey's maintenance shop since 1987, and is today chief aircraft inspector with the company, heading up a staff who work on everything from single-engine piston aircraft to twins and turbines.

Some of the other employees at Morey Airplane Company work part-time, like professional bank executive Pete Aarsvold of Verona, Wis., who flight instructs in the evening and on weekends. Others like retired engineer, John Appleyard of Sauk City, Wis., volunteer as ground school instructors.

The Morey family has been honored many times over the years for their contributions to aviation and countless accomplishments. Howard Morey was inducted into the Wisconsin Aviation Hall of Fame in 1987, followed by his son, Field Morey, in 2004. Howard Morey was the first chairman of the Wisconsin Aeronautics Commission, president of Wisconsin Central/North Central Airlines (1953-54), and the first manager of what is now Dane County

The staff at Morey Airplane Company (Back Row): Mark Leonard, Pete Aarsvold, Scott Cabot, Jake Hellenbrand, John Appleyard, Nick Parks, and Harold Green. (Front Row): Rollie Mack, Randy Stothard-Kampen, Debbie Maier, Rich Morey, Al Barger, Greg Jelinek, and George Martin. (Not Pictured): Tony Colin, Stephen Omdahl, Tom Huismann and Mike Love. *Dave Weiman Photo*

Regional Airport in Madison, Wisconsin. Field Morey managed the business from 1970 to 2003, and founded Morey's West Coast Adventures and Instrument Flight Training programs in 1980. He also holds a number of world records for speed and endurance in a single-engine airplane.

Morey Airplane Company was honored by the Wisconsin Aviation Trades Association (WATA) with the "Wisconsin Aviation Business of the Year Award" in 2014. Morey Airplane Company was selected from among 250 aviation businesses in the state.

In presenting the award to Richard Morey, WATA board member, Bruce Botterman, stated: "Morey Airplane Company's reputation in flight training is internationally known and respected, and all departments follow the Morey Airplane Company tradition of excellence!"

Botterman further stated: "Richard Morey saw through the development of the new Middleton Municipal Airport – Morey Field, and has proven himself effective in working with city officials and airport tenants as airport manager."

Richard Morey is a graduate of Blackhawk Technical College in Janesville, Wisconsin, and grew up at the airport, working in each of its five departments. Morey is a professional pilot with more than 17,000 hours, a flight instructor and a licensed aircraft inspector and technician. He was appointed airport manager for the City of Middleton in 2003. Morey's sister, Debbie Maier, has been office manager since 2006.

Among the many activities the company is involved with in the community include hosting an annual fly-in breakfast in July in cooperation with Chapter 1389 of the Experimental Aircraft Association (EAA), Flying Hamburger Socials, and FAASTeam safety seminars. Middleton Municipal Airport – Morey Field is one of few airports in the Midwest where you can train in a modern airplane, or fly in an open cockpit biplane.

To learn more about careers and services at Morey Airplane Company, visit their website at www.MoreyAirport.com or call Richard Morey at 608-836-1711. ❑

Cirrus Aircraft Unveils Generation 2 Vision Jet

DULUTH, MINN. & KNOXVILLE, TENN. – Cirrus Aircraft has announced the launch of their next generation Vision Jet™ – 'G2' – enhancing performance, comfort and safety for the world's first single-engine Personal JetTM. Increases in cruise altitude, speed and range join the newly-upgraded Perspective Touch+TM by Garmin® flight deck. Innovative technologies unique to G2 include a category-first Autothrottle, Flight Stream connectivity and more. Enhancing the passenger experience, new executive seats, thoughtfully-engineered noise reduction and a passenger productivity console highlight numerous G2 cabin upgrades.

"The Cirrus Aircraft story is one of relentless innovation," said Pat Waddick,

Vision Jet G2

President, Innovation & Operations. "Much like the last 20 years of re-imagining the SR Series with constant improvements to performance, safety and comfort, the G2 Vision Jet is the culmination of that same spirit of innovation. This aircraft is yet another game-changer in personal aviation and it's made possible by the world-class team we have at Cirrus Aircraft."

Higher, Faster & Farther

The G2 Vision Jet goes higher, faster and farther than its predecessor. An expanded flight envelope to Flight Level 310 (31,000 ft) raises the performance and capabilities of the all-new aircraft. This new access to Reduced Vertical Separation Minimum (RVSM) flight levels now increases the Vision Jet's range to over 1,200 nm. On a typical mission, G2 now provides increased flexibility to carry an additional 150 lbs on an 800 nm mission and pushes top cruise speed even further above 300 kts.

Perspective Touch+ & Autothrottle

The G2 Vision Jet introduces the 'Perspective Touch+' by Garmin (pronounced "Perspective Touch Plus") advanced flight deck. With new hardware, faster processing speeds and greater screen resolution, Perspective Touch+ elevates the Vision Jet flight deck to a new level. Typically found on high-end business jets and commercial transport aircraft, Autothrottle is now available on the G2. This game-changing technology integrates with the autopilot and can automatically adjust the aircraft's speed for each phase of flight, reducing workload and giving the pilot more time to focus on other tasks.

New Flight Stream capabilities simplify the pilot's experience by creating connectivity between your personal mobile device and the flight deck – enabling a wide range of wireless enhancements including flight plan transfers, database updates, text messaging and more.

Collectively, these new G2 features add to the class-leading capabilities of the Vision Jet flight deck including 3D Synthetic Vision, SurfaceWatchTM, integrated crew alerting, datalink weather, active weather radar, ADS-B, satellite communications, system synoptics and more. Upgraded Intelligent Batteries from True Blue Power® round out enhancements delivering improved cold start capabilities.

Transformative Cabin Experience

Designed around the personal travel experience, the G2 Vision Jet cabin raises the bar in comfort, spaciousness and productivity. A new executive seating configuration adds sophistication with two luxurious, artisan-crafted second row seats and an all-new center console with stow-away tables for a more productive in-flight experience. Enhancing the cabin environment, newly-developed noise reduction features have been thoughtfully engineered into the G2. These improvements build upon the unrivaled spaciousness and panoramic views, the hallmarks of the Vision Jet design.

Productivity and entertainment options abound as passengers have access to USB and 110V power outlets, as well as an expansive video monitor that extends from its flush mount overhead to deliver a best-in-class range of display and entertainment options from your favorite device. While the family seating configuration offers room for five (5) adults and two (2) children, each cabin seat is modular and can be quickly and easily repositioned or removed by the pilot, offering the added flexibility of more than 25 possible seating configurations.

A New Era In Personal Transportation

The Vision Jet received FAA certification in 2016 and immediately ushered in a new era in personal aviation as the world's first single-engine Personal Jet including the Cirrus Airframe Parachute System® (CAPS®). In 2018, the Vision Jet was awarded the most prestigious award in aeronautics – the Robert J. Collier Trophy.

Approaching 100 customer deliveries around the world, Vision Jet owners enjoy the added value of a truly comprehensive ownership program – JetStream, offering worry-free ownership. JetStream includes the award-winning Williams International 'TAP Blue' turbine engine coverage, airframe and avionics maintenance, normal wear item replacements, recurrent pilot training and more. G2 Vision Jets begin delivering this month.

For additional information contact Gary Black, Great Plains Regional Sales Director, at 612-810-4712 or Al Waterloo, Regional Sales Director, Chicago Territory, at 773-372-0104 (www.cirrusaircraft.com). ❑

Aeronautics Report

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Bringing More Women & Girls Into Aviation In Wisconsin

Women in Aviation International members who are in the armed forces met at the annual Women in Aviation Conference in Orlando, Fla. in 2017 to honor two Women Airforce Service Pilots (WASP) of World War II. *Photo Courtesy of Women in Aviation International*

by Meredith Alt
Aviation Education Program Manager
Wisconsin Department of Transportation

Meredith Alt

Ask the next female pilot you encounter how she got involved in aviation and you'll hear some interesting stories. Ask why she got involved and you may get even better ones. But first, you'll have to meet a female pilot, and even in 2019, they are rare. Fortunately, in Wisconsin, a growing number of women and men are seeking to change that by encouraging young people, especially girls, to get involved in aviation.

Outreach is a central focus for several Wisconsin aviation organizations. According to Women in Aviation International (WAI) – Oshkosh Chapter President, Trish Deimer Steineke, "Our biggest goal is to introduce new people, especially young ones, to the joys of aviation." With the aviation industry seeking to fill more than two million jobs over the next 20 years, there is a tremendous amount of opportunity for young people who discover the thrill of aviation.

While many members of aviation groups want to share their enthusiasm for flying, the need to reach out to women and girls specifically, is clear. According to the Federal Aviation Administration, only 7% of all pilots and student pilots in the United States are women. Worldwide, the percentage of pilots is estimated to be under 5%. The International Air Transport Association states that the proportion of women holding CEO roles in aviation is 3%, compared with 12% in other industries.

Many women note the power of aviation role models

and of having female mentors. In Wisconsin, finding female mentors is becoming easier. In the last year, the number of local chapters of international women's aviation organizations has almost doubled.

One such organization is the Ninety-Nines. The Ninety-Nines started in 1929 as a way for female pilots to meet and support one another. Amelia Earhart was the organization's first president. In Wisconsin, the Ninety-Nines date back to 1940. There are two Wisconsin chapters: the Northwoods Chapter and a statewide chapter.

When asked about her work with the Ninety-Nines, Deirdre Dreger, Chair of the Ninety-Nines–Northwoods Chapter in Wisconsin and Michigan, responded: "I LOVE being a 99. I have made many friends through this wonderful organization." She noted, "I am the ONLY female pilot at my airport. It is important that we connect with each other."

One of the goals of Women in Aviation International is to introduce young people, especially girls, to the joys and opportunities of aviation. *Photo Courtesy of Women in Aviation International*

WAI, which is dedicated to advancing women in all aviation career fields, has a chapter in Oshkosh and recently, two new chapters have been established in Madison and Milwaukee. Both the Ninety-Nines and WAI encourage women to explore aviation, conduct outreach, and have scholarship programs. A key difference is that the Ninety-Nines are all female pilots, including student pilots, while WAI membership is open to both women and men with an interest in aviation.

Joan Kelnhofer, the president of the new WAI chapter in Milwaukee, recently observed, "Growing up in the '60s and '70s, there was very little exposure to careers in aviation for women. I started the new WAI of Southeastern Wisconsin Chapter because I felt there was a great need for it in the metropolitan Milwaukee area. I am very excited about all the different avenues there are in aviation today."

Several members of the new chapters have been interested in aviation for years and only recently became active. The new WAI Madison (Four Lakes) Chapter President, Sarah Pozdell, emphasizes that the chapter encourages newcomers and people with a variety of backgrounds, including non-pilots. She notes, "As someone who loved aviation but didn't have access to that world until later in life, I want to make sure people who have the interest also have the access." She says that opportunities for WAI involvement may include community outreach, mentoring, social events, fund raising, and general aviation encouragement.

The Wisconsin chapters of the Ninety-Nines and WAI welcome new members, and people interested in learning more, as well as sponsors for upcoming activities. If you are interested, please contact your nearest chapter.

Contact Information

WAI of Southeastern Wisconsin (Milwaukee area)
- Chapter Website/Facebook page: (Being developed)
- President: Joan Kelnhofer
- Email: joankelnhofer@gmail.com

WAI - Four Lakes Chapter (Madison area)
- Chapter Website/Facebook page: (Being developed)
- President: Sarah Pozdell
- Email: pozdell@gmail.com

WAI - Oshkosh Chapter
- Chapter Website/Facebook page: facebook.com/OshkoshWAI
- President: Trish Deimer Steineke
- Email: patricia.deimer@gmail.com

Ninety-Nines – Northwoods Chapter (WI, MI)
- Website: http://northwoods.ncs99s.org
- Chair: Dee Dreger
- Email: northwoods@ncs99s.org

Ninety-Nines – Wisconsin Chapter (statewide)
- Website: http://wisconsin99s.org
- Chair: Krys Brown
- Email: wisconsin@ncs99s.org

EDITOR'S NOTE: Meredith Alt (meredithl.alt@dot.wi.gov) is the Aviation Education Program Manager at the Wisconsin Department of Transportation and the Outreach Coordinator for the WAI Four Lakes Chapter. ❑

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2019 – Another Year of Exciting Aviation Events & Opportunities In Minnesota

by Cassandra Isackson
Director, Minnesota DOT Office of Aeronautics


Cassandra Isackson

With the new year well underway, we are looking forward to another year of exciting events and opportunities in aviation around the state.

About the MAMTC

The 2019 Minnesota Aviation Maintenance Technician Conference will once again take place at the at the Earle Brown Heritage Center in Brooklyn Park, Minnesota on March 25th and 26th. Registration is open and early registration ends March 15th. There are two ways to complete your registration. You can register online at: **www.regonline.com/2432039**, or download the registration form. Complete the form and mail it with your payment, to the address listed on the bottom of the form.

There will be a host of vendors showing the latest technologies, tools and tips for aviation maintenance technicians. If you would like more information, visit the conference website at **www.regonline.com/2432039**, or contact Darlene Dahlseide at **darlene.dahlseide@state**.mn.us or 651-234-7248.

News from NASAO

I am very pleased to let you know that the National Association of State Aviation Officials (NASAO) has chosen Shelley Simi (December 14, 2018) as its new President and CEO. Shelly's extensive industry experience, as well as her deep and abiding passion for aviation, will ensure NASAO's continued success in serving the public interest to sustain, advance and promote aviation in our respective states. We will be hosting NASAO's annual Conference September 7-11th at the Intercontinental Hotel in St. Paul. We will be sending out a call for exhibitors, presentations and speakers soon. Please watch for more information and join us in September!

About The SASP

We continue to make progress on updating Minnesota's State Aviation System Plan (SASP). The SASP is part of MnDOT's Family of Plans, which stem from the Minnesota GO 50-year Vision. The Vision outlines what Minnesotans desire from the state's transportation system and identifies key guiding principles MnDOT strives to achieve. **The SASP:**

- Sets goals for the aviation system
- Identifies aviation needs, and
- Creates a direction for the future

You can review and provide comments about the SASP by going to: **https://www.dot.state.mn.us/aero/planning/sasp.html**

Please continue to be active in aviation wherever you are in Minnesota. Attend multiple FAA Safety Seminars where you will have wonderful opportunities to network with fellow aviators and learn ways to become a better, safer pilot. ❑

Listen! Are you using the right words correctly?

When you fly, do you listen to the aircraft radio when you are approaching or passing over airports? Do you really listen? Or are you busy thinking about the proverbial $100.00 hamburger you will get when you land? Hopefully you actually listen.

The purpose of the radio equipment in your aircraft is of course for communicating not only your status and intentions, but also for receiving communications from other aircraft along with their status and intentions. Let's not forget about receiving guidance and support from air traffic control (ATC) over the various aviation frequencies. But again, the question is raised, are you listening and speaking properly when using your aviation communication radio?

If you are listening, you will no doubt hear (too many) aviators using non-standard or improper language on the aircraft frequencies. Why do they do that? You'd have to ask them, but their reason(s) probably fall into one or more of three categories: lack of knowledge *(no excuse),* laziness/or complacency *(no excuse),* or, trying to sound airliner cool or military "tacticool" *(no excuse)*. None of these three reasons is acceptable in the air or on the ground.

It is important to remember two things: 1. Clear communication whenever you are in your aircraft is a very important key to your safety and 2. An aircraft radio and its usage is NOT the same as a CB (Citizen's Band) radio. There are very specific words and phraseologies developed and approved by the Federal Aviation Administration (FAA) specifically for aviation usage. Failure to use the proper words and phrases can significantly impact your safety, as well as the safety of other aviators in the air or even on the ground.

Standardized phrases and vocabulary, when used as directed by the Aeronautical Information Manual (AIM), help to assure that ATC and pilots clearly understand what is being said. Imagine if ATC was trying to control flights in an area where one pilot speaks only French, one only Spanish, and another only Japanese. Giving simple instructions to those three aircraft would be a tremendous challenge at best. But standardized phraseology in one accepted language would of course make a world of difference and enhance the safety of those three pilots and anyone flying into or out of that airport.

To learn, relearn, or review the proper words and phrases to use, read Section 2, 4-2-1 to 4-2-14 of the AIM, a total of six and a half pages. To get you started, here are a few select sentences and paragraphs taken directly from the AIM to help assure you are on the right heading to always using the proper words and phraseology, from start to finish.

AIM 4-2-1: a. Radio communications are a critical link in the ATC system. The link can be a strong bond between pilot and controller or it can be broken with surprising speed and disastrous results.

b. The single, most important thought in pilot/controller communications is understanding. It is essential, therefore, that pilots acknowledge each radio communication with ATC by using the appropriate aircraft call sign. Brevity is important, and contacts should be kept as brief as possible, but controllers must know what you want to do before they can properly carry out their control duties. And you, the pilot, must know exactly what the controller wants you to do. Since concise phraseology may not always be adequate, use whatever words are necessary to get your message across. Pilots are to maintain vigilance in monitoring air traffic control radio communications frequencies for potential traffic conflicts with their aircraft especially when operating on an active runway and/or when conducting a final approach to landing.

c. Good phraseology enhances safety and is the mark of a professional pilot. Jargon, chatter, and "CB" slang have no place in ATC communications.

AIM 4-2-2: a. LISTEN before you transmit. Many times you can get the information you want through ATIS or by monitoring the frequency. Except for a few situations where some frequency overlap occurs, if you hear someone else talking, the keying of your transmitter will be futile and you will probably jam their receivers causing them to repeat their call. If you have just changed frequencies, pause, listen, and make sure the frequency is clear.

b. THINK before keying your transmitter. Know what you want to say, and if it is lengthy, for example, a flight plan or IFR position report, jot it down.

d. When you release the button, wait a few seconds before calling again. The controller or Flight Service Station specialist may be jotting down your number, looking for your flight plan, transmitting on a different frequency, or selecting the transmitter for your frequency.

e. Be sure that you are within the performance range of your radio equipment and the ground station equipment. Remote radio sites do not always transmit and receive on all of a facility's available frequencies, particularly with regard to VOR sites where you can hear but not reach a ground station's receiver. Remember that higher altitudes increase the range of VHF "line-of-sight" communications.

AIM 4-2-9. ALTITUDES AND FLIGHT LEVELS

a. Up to but not including 18,000 feet MSL, state the separate digits of the thousands plus the hundreds if appropriate.

EXAMPLE: 12,000 - ONE TWO THOUSAND

EXAMPLE: 12,500 - ONE TWO THOUSAND FIVE HUNDRED

b. At and above 18,000 feet MSL (FL 180), state the

words "flight level," followed by the separate digits of the flight level.

EXAMPLE: 190 - FLIGHT LEVEL ONE NINER ZERO
EXAMPLE: 275 - FLIGHT LEVEL TWO SEVEN FIVE

AIM 4-2-11. SPEEDS

The separate digits of the speed, followed by the word "KNOTS." Except, controllers may omit the word "KNOTS" when using speed adjustment procedures. For example, "REDUCE/INCREASE SPEED TO TWO FIVE ZERO."

EXAMPLES: (Table 4-40[1])
(Speed) 250 - TWO FIVE ZERO KNOTS
(Speed) 190 - ONE NINER ZERO KNOTS

One more important point: Many people have allowed the improper use of the word "Roger" to creep into their daily flying and non-flying language with an associated dilution of the actual meaning. In aviation, "Roger" means, "I have received all of your last transmission." It should never be used when answering a question that calls for a YES or NO response.

As you read Section 2 of the AIM, you will realize that practicing clear and concise communications is a key factor in safe flight throughout the nation and the world. So please make it a priority to review the AIM with an emphasis on Section 2. Make sure when you fly that you listen well and always use the correct aviation vocabulary and phraseology. Safety should always be your priority one. ❑

Cassette Players, Pay Phones & NDBs

by Rick Braunig
Manager, Aviation Safety & Enforcement
MnDOT Aeronautics


Rick Braunig

It's been a while since I've ridden in a car with a cassette player. I know we have a lot more old aircraft in the system than old cars. One of the Bonanzas that MnDOT operates just turned 40 and though it had an ADF in it when it was new, that panel real estate has given way to a touch screen GPS. I hear from flight schools that their ADF that was working the day before is magically placarded inoperative for flight tests. It's been a while since we at MnDOT have considered NDBs a key navigational aid in our system. As GPS became the primary navigational tool our NDBs transitioned to being radio stations for the broadcast of airport weather. We've now transitioned those weather broadcasts to VHF with the exception of Bigfork and that will happen in 2019.

MnDOT has 35 NDBs in our system. These are owned, operated and maintained by the Office of Aeronautics. Like all our navigation aids they need regular inspections and occasionally they fail and need repair. Some of the NDBs are an old design and we are having to scavenge parts to keep them running. While many of the NDBs are on airport property, 11 of ours are Locator Outer Markers on land that is off the airport and must be leased. One prominent NDB – HOPEY – is on leased land and the land owner has told us they do not intend to renew our lease. What you should understand is that NDBs cost money to keep them operating.

The FAA has started to implement their VORMON program, which stands for VOR Minimum Operating Network. If you are unaware of the details, under the VORMON program they are increasing the service area of VORs from 40 to 80 miles and eliminating VORs where there is overlap. We have seen two Federal VORs in Minnesota shutdown under the VORMON program and a number of others are on the list for the coming years. This will eliminate the VOR approaches associated with those navigational aids. Reading between the lines, if you want to operate in instrument conditions you need to have a GPS receiver with the capability to fly GPS based approaches.

All the Minnesota Airports with NDB based instrument approaches have GPS based approaches that provide equal or lower minimums. That means at least two approaches exist for all of the runways served by an NDB approach. The FAA reviews all instrument approaches every two years. Right now, it takes more than two years to get a new approach. Eliminating duplicate approaches to a runway helps to reduce the FAAs workload and hopefully will help them be more responsive to new requests.

In 2019 MnDOT will start the process of decommissioning our NDBs. The dollars we save on NDB operating and maintenance costs will help to maintain and improve the system in other ways. We are seeing increased costs for our weather stations and we want to continue to improve the other navigation aids at Minnesota airports. The decommissioning process will include notice through our website and social media, as well as written notice to the local communities and surrounding airports, and will allow for users to provide feedback.

I am excited about how GPS has improved the safety of the system and provides better access to airports. Unfortunately, like cassette players and pay phones, we feel the time has come to retire the remaining NDBs in Minnesota. ❑

In Our Perfect Sky

For many centuries, humankind has longed to touch the sky and fly free and fast like the birds do. It wasn't until December 17, 1903 that we took that first small step toward that goal. Now we not only cruise throughout the sky, but we have also stepped into the heavens. As an allied group of astronauts continually circle the earth onboard the International Space Station, they learn more every day that will in time, help us to reach further and further into space.

A little closer to home, however, is our perfect sky. Everyday aviators by the thousands take to the air and travel all over the globe. Many fly only a few thousand feet above the ground, while others fly several miles high, with a few that reach the upper limits of our atmosphere. One might think that only those who go the highest can see and experience the myriad of natural phenomena that occurs in our sky.

Things like an azure blue sky, puffy white clouds, and brilliant red and pink sunsets are optical phenomena associated with small particles in the atmosphere. Rainbows, coronas and glories are types of optical phenomena associated with liquid water droplets in the air. Halos, parhelias (sun dogs), and sun pillars are optical phenomena caused by ice crystals in the air. Nearly all of these items listed can best be seen from the ground.

To understand these phenomena, we must first have a very basic understanding of light and its properties. Almost half of the solar energy has wavelengths within the visible spectrum. The human eye is sensitive to this specific portion of the spectrum. In addition, human eyes have nerves called rods and cones that allow us to see light and dark, and color. The rods sense the light and dark, and the cones sense color. We see white light when the visible light striking the cones is essentially equal in intensity. A majority of what we see is due to incident light reflection.

Incident light can be explained as the light emanating from the source, and perhaps illuminating an object that you are observing. For instance, the light coming from the Sun is incident light when it hits a tabletop. If a mirror is placed in that "beam of (incident) light," the light bounces off the mirror. In other words, it is reflected. And for the purists in the audience, the angle of incidence equals the angle of reflection.

Refracted light is light that has been bent as it passes through a more dense material. For instance, light passing through hexagonal (six sided), pencil-like ice crystals will exit the crystals at an angle different from that when it entered the crystal. This action can create a "rainbow-like" effect called "parhelia," or commonly referred to as "sundogs."

Sundogs develop when transmitted light is refracted by hexagonal, plate-like ice crystals that are falling with their long axis horizontally situated. The ice crystals bend and disperse the Sun's light. The result is a stunning prismatic effect. Because light travels in different wavelengths, we see it as different colors. Thus, when a sundog develops, the color red (long wavelength) will always be on the inside portion of the sundog, and violet (short wavelength) will be on the outer-most portion. This is because red light bends the least, while violet bends the most.

"Rainbow in flight."
Photo by Kobe Hunte, 2018. UWP Dec 2018

Air molecules are very small, yet highly selective in the light wavelengths they will scatter. They are very effective at scattering green, blue, and violet light. This is why we see the perfect sky as blue. The higher you climb, the deeper blue the sky appears because fewer and fewer air molecules are there to scatter the light. That also explains why astronauts see a black sky, because there are no air molecules in space.

Sometimes in the bright sky of day or the inky black sky of night, the Sun or Moon, under proper atmospheric conditions, can produce a halo or ring of light surrounding it. The halo is created when light from the Sun or Moon is actually refracted by ice crystals usually associated with high, thin, wispy cirrus clouds. But the result is most always visually spectacular.

So, this winter, take time every day to look up. Now that you have a little more knowledge of the natural phenomena of the sky*, when you fly, or when you are on the ground, you will be able to better observe and enjoy the magnificent natural events that occur in our perfect sky.

*For additional information about natural sky phenomena, go to a truly outstanding, information packed website produced by Dr. Les Cowley at:
https://www.atoptics.co.uk/ ❑

The People, Technicians & Pilots Behind Our Navaids

by Dave Weiman

As pilots, we fly along, day in and day out, and at night, using a variety of navigational aids (navaids) including Automated Weather Observing Systems (AWOS); Very High Frequency (VHF) Omni-Directional Ranges (VOR); Non-Directional (radio) Beacons (NDB); Distance Measuring Equipment (DME); and Ground Communications Outlets (GCO), in addition to Instrument Landing Systems (ILS). While most pilots now use Global Positioning Systems (GPS) for navigation, we still depend on AWOS to obtain current weather at thousands of non-towered airports without Automatic Terminal Information Service (ATIS). Essential to the safe and reliable operation of navaids are the "people" who install and maintain them.

Jim Larson with his wife, Judy, enjoying a flight in their A36 Bonanza. Larson bought the aircraft in 1992 to maintain state-owned navaids in Minnesota.

According to officials with the Minnesota Department of Transportation (MnDOT), Office of Aeronautics, the Federal Aviation Administration (FAA) owns about half of the navaids in the United States. In most states, the navaids which are not owned by the FAA are owned by individual airports. In Minnesota, the State of Minnesota owns and operates more non-federal navaids than any other state with 215, followed by Texas with 182 and Georgia with 153. MnDOT also owns and operates most of the AWOS equipment in the state.

We asked Minnesota Aeronautics Director Cassandra Isackson, why Minnesota has more non-FAA funded navaids than any other state:

"We live in a state with a lot of weather, so MnDOT has always worked to ensure access to airports statewide," said Isackson.

One of the key navaid technicians in Minnesota is Jim Larson, owner of Radio Systems, Inc., one of several independent contractors who work for MnDOT. *Midwest Flyer Magazine* recently spoke with Larson about his rewarding and challenging career.

Jim Larson was born and raised in Little Falls, Minnesota, the birthplace of famed aviator, Charles Lindbergh. Larson now lives in Aitkin, Minnesota, where he works out of his home. "I originally attended Alexandria Area Technical School for avionics where I obtained my First-Class Radiotelephone License," said Larson. "I then joined the Army National Guard and trained in many different types of aviation electronics. I received my Private Pilot Certificate in 1970 and started contracting maintenance and installation work on NDBs and VORs with the then Department of Aeronautics in 1972.

Larson is responsible for maintaining 46 sites around the state including GCOs, and ILS, VOR, NDB, DME and AWOS equipment, and is on call 24/7. His most northern site is the AWOS facility at Flag Island in Lake of the Woods. His most eastern site is Rush City. His most southern site is Montevideo, and his most western site is Wheaton.

FAA certification is required for each type of equipment Larson maintains, as well as periodic inspections. Airborne inspection of the equipment is done by the FAA Flight Inspection Section, which Larson works with to verify proper equipment operation. The equipment is monitored by a network operated by MnDOT to check for outages, and in the case of AWOS equipment, for missing sensors. The National Weather Service also monitors the AWOS equipment for proper operation since AWOS data is also used

An aircraft lands using a Medium intensity Approach Lighting System with Runway alignment indicator lights (MALSR). While not a navaid per se, this equipment requires the expertise of trained technicians to install and maintain it.

VORs are still used for navigation today, but GPS technology has helped pilots to be less dependent on them than they used to be.

AWOS provides pilots with current weather at thousands of non-towered airports nationwide.

for their information and is fed to the FAA and the broadcast media as well. Both the State of Minnesota and FAA rely on pilot reports (PIREPS) in identifying problems.

Larson can see a day when land-based navigation facilities will be replaced by GPS guidance. However, he believes that AWOS will still be an important navaid. "A pilot cannot have too much weather information!"

Larson says that the most gratifying part of his job is going to work every day and repairing or improving the performance of the equipment used by his fellow aviators. This work is oftentimes made more interesting by bad weather, storms or lightning.

Larson flys his A-36 Beechcraft Bonanza to each site when he can, but when the weather is bad and equipment is down, he will drive his personal vehicle to get things back up and running.

Larson holds Commercial and Rotorcraft Pilot Certificates, and Instrument, Single-Engine Land and Sea, and Multi-Engine Land Ratings. He is a member of EAA and AOPA, and a lifetime member of the American Bonanza Society (ABS).

Among the aviation events Larson regularly attends is EAA AirVenture Oshkosh in Oshkosh, Wisconsin, where he meets with equipment suppliers and state aviation officials, and keeps an eye on the latest and greatest developments in aviation technology.

While Larson will soon be retiring after 46 years of service, there are several other contractors in Minnesota who will continue to work to keep the state's system safe and operational. There is also an opportunity for new people to get into the profession. It takes 4 months and about $50,000 to train and certify a navaid technician.

To learn more about career opportunities in maintaining navaids in Minnesota, contact the Minnesota Department of Transportation, Office of Aeronautics at 651-234-7200. ❑

Fall Forum participants learn about inner workings of PAPIs at Brainerd International Airport, Brainerd, Minnesota.

Fall Forum participants touring snow removal equipment at Alexandria Municipal Airport, Alexandria, Minnesota.

AirTAP – Minnesota's "One Stop Shop"

by Jim Bildilli

Fall Forum participants get advice on pavement maintenance at Mankato Regional Airport, Mankato, Minnesota.

Whether you are a full or part-time airport operator or manager, the state of Minnesota has created a program that can furnish resources to help answer questions and provide solutions to an array of problems.

In 2001, the Minnesota Department of Transportation's Office of Aeronautics, and the University of Minnesota Center for Transportation Studies, formed a partnership to assist airport managers, airport consultants, airport sponsors and fixed base operators, called the "Airport Technical Assistance Program" or simply "AirTAP." The Minnesota Council of Airports (MCOA) was also a key player in the development of the program.

Whether an airport is big or small, the day-to-day problems encountered are very similar and usually only differ in magnitude. Needless to say, those who manage or are responsible for the operation of airports also vary from the professionally trained airport manager to the unpaid volunteer. AirTAP was created to provide information resources, training and a network for exchanging ideas amongst those individuals charged with managing the airport. The concept is somewhat parallel to the idea of not "re-inventing the wheel" where others can benefit from those with the expertise and experience.

AirTAP provides assistance through a mix of formal education and training programs, specific technical assistance, various publications and its website www.airtap.umn.edu. Its goal is to provide access to information and training that ultimately will reduce costs, and improve the overall safety and efficiency of airport operations.

Although the funding is provided by MNDOT Aeronautics, the University of Minnesota Center for Transportation Studies administers the program which includes the annual Minnesota Airports Conference, and the Fall Fly-Around and Forums. In addition, there is also specific technical training covering wildlife control, airport lighting and pavement preservation, emergency and safety management practices, and since this is Minnesota, snow and ice control. Recently AirTAP presented an "Airport 101" program for those seeking to know more about managing an airport. Through its website, you can download a quarterly newsletter entitled "AirTAP Briefings" and a myriad of publications and guides covering the promotion of your airport, to best management practices.

Through its website, you can also link to additional

helpful publications including those produced by the Transportation Research Board's Airport Cooperative Research Program.

Bill Towle, manager of St. Cloud Regional Airport, St. Cloud, Minnesota, says this about the program: "AirTAP has been very beneficial, not only to me here in St. Cloud, but to the entire state of Minnesota. AirTAP has been able to offer item-specific training on things like NOTAMS, snow removal and emergency management for my operations and maintenance staff, and has been able to provide it right here in-state, which saves me lots of time and money over sending those folks to a conference out-of-state."

AirTAP is a successful program that benefits not only the airport owner and manager, but ultimately the pilot and aircraft community through the sharing of ideas and best practices. Ultimately, it makes the system safer and more efficient while providing savings to the taxpayers and users.

Anyone wishing to learn more about the program and perhaps how to start one in their state, can contact Mindy Carlson, AirTAP Director at carlson@umn.edu or at 612-625-1813. ❑

Shelly Simi Named NASAO President/CEO

WASHINGTON, DC – The National Association of State Aviation Officials (NASAO) has named Shelly Simi its new President and CEO. In this capacity, Simi will work closely with the NASAO Board of Directors and state representatives to actualize the mission and vision while enhancing the goals of the association. Prior to her appointment, Simi was the Director of Corporate Communications & Public Affairs at Aurora Flight Sciences Corp., a Boeing Company.

Shelly Simi

Throughout Simi's extensive 25-year career in aviation, she has worked with numerous aviation executives and government officials. With a strong association background, she has made numerous accomplishments, some of the most notable included serving as the vice president of communications for the General Aviation Manufacturers Association (GAMA), president of the Aero Club of Washington, and founding board member of Women in Aviation, International.

Cassandra Isackson, Director of the Minnesota Office of Aeronautics and Chair of the NASAO Board of Directors, expressed NASAO's enthusiasm in Simi's appointment: "On behalf of the NASAO Board of Directors, we are pleased and excited to welcome Shelly Simi as our new President and CEO. Shelly's extensive industry experience, as well as her deep and abiding passion for aviation, will ensure NASAO's continued success in serving the public interest to sustain, advance and promote aviation in our respective states."

Simi's dynamic background and industry experience working at companies like Adam Aircraft and Jeppesen made her the ideal candidate.

"These are exciting times to be in aviation and aerospace with new emerging technologies and a solid five-year funding stream," said Simi. "I look forward to working with the states where important initiatives like airport and infrastructure development, technology implementation and enhancing STEM education and workforce development are top priorities."

Simi attended George Washington University's Public Relations Certificate Program in Washington, DC, and holds a Bachelor of Commercial Aviation degree with a minor in Flight Operations from Delta State University in Cleveland, Mississippi.

NASAO is dedicated to representing the interests of the states and the public before policymakers at the federal level. NASAO members organize, promote, and fund a wide variety of aviation programs across the nation (www.nasao.org). ❑

Futuristic Inspection & Maintenance Management System Uses Drones & Geospatial Technology At US Bank Stadium

by Jonathan Beck
UAS Technology Instructor
Northland Community and Technical College
Principal Investigator-DroneTECH
National Science Foundation ATE Program

Drones flew around US Bank Stadium in Minneapolis, Minnesota, to collect high-resolution imagery. The ongoing project that has been in development since July 2018, and involved Northland Community and Technical College, St. Cloud State University (SCSU) and the Minnesota Sports Facilities Authority, has inspired new ideas based on industry needs to efficiently and effectively utilize drone technology.

A first-of-its-kind cutting edge concept and technology received media attention in December 2018, as Northland Community and Technical College, St. Cloud State University (SCSU) and the Minnesota Sports Facilities Authority unveiled the results of an ongoing project that has been in development since July. The project has potential for extraordinary impact on industries using drone technology. The results will now be in the hands of our students in the classroom and in the field. Industry partners, such as Sentera of Minneapolis, Minnesota, supported the project by providing necessary subject matter experts for drone and sensor selection, as well as using their Field Agent software to map the roof structure.

Drones flew around US Bank Stadium in Minneapolis, Minnesota, to collect high-resolution imagery. Using newly developed software tools allowed for easy viewing of desired information in real time. This provided not only an accurate historical database of imagery and information, but also georeferencing of imagery in three-dimensional space which, in turn, can be projected onto existing 3D models for user reference. The project has inspired new ideas based on industry needs to efficiently and effectively utilize drone technology. It has led to the development of new software tools for one of the biggest challenges facing the drone industry: processing mass amounts of drone imagery into usable products.

Working across the state of Minnesota, this project seeks to identify industry needs, collaborate with subject matter experts, and create real world solutions using drones and geospatial technology. An important goal for Northland and SCSU is to integrate lessons learned into technical education and advanced degree programs. This is a core component to service-based learning and applied learning that enhances students' educational experience. The new tools and concepts previously unavailable to geospatial technicians will benefit students at Northland, SCSU and other geospatial programs across the country. Students will see firsthand how this resource can be leveraged to increase efficiencies in the utilization of real time imagery as it relates to a critical infrastructure inspection.

This project is a model example of bringing together industry and education to advance knowledge at all levels through hands-on applications of emerging aviation technology. Drones and geospatial technology impact key interests of many industries today and into the future. ❑

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Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

northlandaerospace.com

Calendar

Include the **DATE, TIMES, LOCATION** ***(CITY, STATE & AIRPORT NAME & I.D.),*** and **CONTACT PERSON'S TELEPHONE NUMBER**, as well as that person's address & email address for reference. First 15 words **FREE.** $.75 for each additional word.

Go to "Calendar" at www.MidwestFlyer.com and post your aviation event.

You can also email: info@midwestflyer.com – Or – Mail To: Midwest Flyer Magazine, 6031 Lawry Court, Oregon, WI 53575

NOTAM: Pilots, be sure to call events in advance to confirm dates and for traffic advisories and NOTAMs.
Also, use only current aeronautical charts, etc., for navigation and not calendar listing information.

Midwest Flyer Magazine is not responsible for the accuracy of, or reliance on, any information published.

* Indicates any new or updated calendar listings since the previous issue.

FEBRUARY 2019

2* **Brodhead (KC37), Wis. -** Groundhog Chili Ski Fly-in. 11am-2pm. Check eaa431.org for field condition update.

9* **Oshkosh (KOSH), Wis. -** EAA Skiplane Fly-In at Pioneer Airport 10am-1:30pm

16* **Milwaukee, Wis. - Wisconsin DOT Mechanics Refresher & Inspection Authorization (IA) Renewal Seminar at the Crowne Plaza Milwaukee Airport Hotel & Convention Center. wisconsindot.gov/Pages/doing-bus/aeronautics/trng-evnts/mech-ia.aspx.**

16* **Platteville (KPVB), Wis. -** Winter Fly-In Chili Feed 11am-1pm (or until food runs out).

18* **Holcombe (4WN4), Wis. -** Luncheon at Eastbay Lodge on Lake Holcombe 11am-4pm. Ice landing, there will be a runway plowed 80 ft by 3000 ft if weather permits, otherwise ski landing not a problem. Lake elevation is 1045 ft above sea level, landing strip east to west, radio frequency 122.8. For more information call Dave 651-269-8120.

24 **Warroad, Minn. -** Lions 41st Annual Ski Plane Fly-In Breakfast. Warroad Airport (RRT) 8am-Noon. Ski Planes land on the Warroad River, Wheel Planes at the Warroad Airport (KRRT). Shuttle service available. For more information, please contact Dave Paulson 218-386-1818, 218-386-2098 or email dpaulson@ssbwarroad.com

MARCH 2019

2* **Garrison, Minn. -** Iceport 2019 Fly-In Breakfast/Lunch 10am-3pm at Twin Pine Resort. Pilots Monitor 122.9. Plowed Ice Runway (Skis & Wheels Welcomed!) www.TwinPinesMilleLacs.com. Contact Mark Priglmeier 320-200-8050 CreateLift@gmail.com

9* **Buffalo (KCFE), Minn. -** EAA Chapter 878 Chili Feed at West Metro Aviation hangar 11am-2pm. Snow Date March 16th. Contact Laura 952-210-8600 or ljherrmann@yahoo.com

16* **Oshkosh, Wis.. -** Wisconsin Ultralight/Lightplane Advisory Council (WULAC) will hold its 26th annual safety seminar in the Founders Wing of the EAA Aviation Museum 9am-4pm. www.av8safe.org.

25-26* **Brooklyn, Minn. - Minnesota Aviation Maintenance Technician Conference at Earle Brown Heritage Center. Register online or visit www.regonline.com/2432039 for more information.**

APRIL 2019

3-7* **Lakeland, Florida -** Sun 'n Fun International Fly-In and Expo. www.flysnf.org

9-10* **Columbus, Ohio -** Ohio Aviation Association Conference "Building Something Better" at the Hilton Columbus/Polaris. www.ohioaviation.org

10 **St. Paul, Minn. - Minnesota Aviation Day At The Capitol. For Information Email - Tim Cossalter timcossalter@outlook.com or Call 651-269-1221.**

24-26 **Willmar, Minn. - Minnesota Airport Conference at Willmar Conference Center. For more information, please visit the conference web page or contact Katherine Stanley at sell0146@umn.edu or 612-626-1023. The conference is brought to you by the Minnesota Council of Airports and the Minnesota Department of Transportation and facilitated by the Airport Technical Assistance Program (AirTAP).**

27 **Minneapolis, Minn. -** Minnesota Aviation Hall of Fame at DoubleTree by Hilton Hotel Bloomington - Minneapolis South. Event starts at 4:45pm. www.mnaviationhalloffame.org/

MAY 2019

5-7 **Green Bay, Wis. - 64th Annual Wisconsin Aviation Conference. wiama.org/**

10-11* **Frederick (KFDK), MD. - AOPA 2019 Regional Fly-In. For more information on each fly-in, visit www.aopa.org/fly-ins.**

19* **Brodhead (KC37), Wis. -** Pancake Breakfast, 7am – noon. Check eaa431.org for field condition update.

19* **Brainerd, Minn. -** Seaplane Safety Seminar at Madden's on Gull Lake Resort. www.mnseaplanes.com

19* **Canton (KCTK), Ill. -** 61st KCTK Club Fly-In 7am-Noon. Trophies, Car Show, Displays.

JUNE 2019

9* **Rush City (KROS), Minn. -** Pancake Breakfast. Warbirds, classic cars, vendors, lots to see! shochstatter@ci.rush-city.mn.us

15-16* **Mankato (KMKT), Minn. -** MN Air Specacular with the USAF Thunderbirds. www.mnairspectacular.com. Contact Fred Lutz. flutz@netscape.com 507-381-0300.

16* **Palmyra (K88C), Wis. -** 70th Annual Father's Day Fly-In/Drive-In Pancake Breakfast, eggs, ham, and of course RADISHES from 7am-noon. Antique and Classic Car Show, a Tractor Show, Airplane and Helicopter rides for a fee, the Palmyra Community Band, & various vendors!

21-22* **Livermore (KLVK), Calif. - AOPA 2019 Regional Fly-In. For more information on each fly-in, visit www.aopa.org/fly-ins.**

JULY 2019

18-21* **Brodhead (KC37), Wis. -** Pietenpol 90th anniversary reunion and Hatz biplane fly-in. Visit www.eaa431.org

20* **Washington Island (K2P2), Wis. - Fish Boil Fly-In Sponsored by the Lions Club. Also music, hay rides, hot dogs & ice cream. washingtonisland.com/event/lions-club-fly-in-fish-boil/**

22-28 **Oshkosh, Wis. - EAA is marking the 50th consecutive year of its annual EAA AirVenture Oshkosh 2019 fly-in convention. www.eaa.org/en/airventure**

AUGUST 2019

3-4* **Boone (NBNW), Iowa -** Fly Iowa Boone 2019 is Iowa's Air Fair. The main date of the event is Saturday, August 3 with Sunday being a weather date if the air show is postponed. Event includes a fly-in, static displays and exhibits, air safety seminar, youth activities, and an air show. Admission is FREE. chuckdsmcc@aol.com

8-11 **Miminiska Lodge, Ontario Canada - Canada Fishing Fly-Out 3-Night/2-Day Trip. FOR RESERVATIONS: Contact Lynette Mish at Wilderness North toll free: 1-888-465-3474.**

8-13 **Miminiska Lodge, Ontario Canada - Canada Fishing Fly-Out 5-Night/4-Day Trip. FOR RESERVATIONS: Contact Lynette Mish at Wilderness North toll free: 1-888-465-3474.**

11* **Lino Lakes (8Y4), Minn. -** Annual Pig Roast at the Surfside Seaplane Base. www.mnseaplanes.com

11-14 **Miminiska Lodge, Ontario Canada - Canada Fishing Fly-Out 3-Night/2-Day Trip. FOR RESERVATIONS: Contact Lynette Mish at Wilderness North toll free: 1-888-465-3474.**

31* **Glencoe (KGYL), Minn. -** Sweet Corn & Bratwurst Fly-In 10am-

2pm. The contact person is Stuart Selchow cell: 320-583-8367, email: stuart.selchow@gmail.com (www.eaaul92.weebly.com).

SEPTEMBER 2019

7* **Osceola (KOEO), Wis. -** Osceola Wheels and Wings.

7-11* **St. Paul, Minn. - NASAO's Annual Conference at the Intercontinental Hotel. Watch for more information soon.**

13-14* **Tullahoma, (KTHA) Tenn. - AOPA 2019 Regional Fly-In. For more information on each fly-in, visit www.aopa.org/fly-ins.**

21-22 **Angola, Ind. -** 17th Annual Indiana Seaplane Pilots Association Splash-In at Pokagon State Park.

28 **Denver, Colo. -** National Aviation Hall of Fame Enshrinement. www.nationalaviation.org

For More Listings, Information & Updates Go To www.midwestflyer.com (Calendar Of Events)

PLEASE SEND US YOUR LISTINGS AT LEAST 90 DAYS PRIOR TO THE EVENT.

Pioneer Hall of Fame Inductees From Page 39

Also, being recognized will be the U.S. Coast Guard's First Women Aviators and Aviation-Related Enlisted Women – a group of three officers and six enlisted women who proved women had a place in military aviation and who opened the door for future generations of women to pursue their military aviation dreams. On January 1, 1976, the Coast Guard opened all aviation ratings to women, thus making aviation service possible for these nine women and others who would follow them. They include officers Colleen Cain, Vivien Crea and Janna Lambine, and enlisted personnel Erminia Chillon, Andrea Gardner, Dior Lowen Hubbel, Kelly Mogk Larson, Robyn Rogers Norwell, and Elizabeth Uhrig. Lt. Colleen Cain is the first female Coast Guard aviator killed in the line of duty when the helicopter she was flying crashed during a rescue mission off Hawaii in 1982. A portrait of Lt. Colleen Cain was painted by Leonora Rae Smith.

"This year's inductees reflect the diversity of careers enjoyed by our members," says WAI President Dr. Peggy Chabrian. "Our International Pioneer Hall of Fame honors not merely women of great accomplishment, but women who have paved the way for generations to follow."

The Women in Aviation International Pioneer Hall of Fame was established in 1992 to honor women who have made significant contributions as record setters, pioneers, or innovators. Special consideration is given to individuals or groups who have helped other women be successful in aviation or opened doors of opportunity for women. Each year, the organization solicits nominations from throughout the aviation industry for the WAI Pioneer Hall of Fame. For more information on the WAI Pioneer Hall of Fame, visit www.WAI.org.

A portrait of Lt. Colleen Cain was painted by Leonora Rae Smith.

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APPLETON CONDO HANGARS FOR SALE - Appleton International Airport (KATW), Appleton, Wisconsin. Two (2) condo hangars. Both have heat, Schweiss bifold doors, water and finished floor. One is a "T" hangar with a 44-foot door and is one of 14 hangars in a building which features a "flight room" and bath. The other is in a building of four "box" hangars, each measuring 48 x 50 feet with a 48-foot door and bath. The one for sale is the last one on the left. "T" hangar is $45,000 and the "box" hangar is $105,900. Call **Tom** at **920-428-5355.**

HANGAR FOR SALE - Juneau, Wisconsin - Dodge County Airport (UNU) – 60W X 52D, Door 50W X 11.5H, $65,000. Contact **Mary** at **920-386-2402** or **Mary.Gasper@WisconsinAviation.com.** More details and photos available at **WisconsinAviation.com.**

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Sculptor of EAA's Compass Hill Statues "Directions" Dies

Compass Hill, located outside of the EAA Aviation Museum, Oshkosh, Wis.
EAA Photo/Max Hermans

TACOMA, WASH. – Nationally renowned sculptor and painter, Larry Wayne Anderson, 78, of Tacoma, Washington, died October 18, 2018 at his home in Bonney Lake after a long illness. Anderson was best known in aviation circles for his statues "Directions" on Compass Hill at the Experimental Aircraft Association (EAA) Aviation Museum in Oshkosh, Wisconsin (1995).

Born in Tacoma on September 30, 1940, Anderson was a pole vaulter in high school, and attended Lewis and Clark College in Portland, Oregon on an athletic scholarship. After two years at Lewis and Clark, he transferred to Central Washington University in Ellensburg, receiving a bachelor's degree in education in 1962. He pursued graduate study in art at the Academy of Fine Art in Vienna, Austria in 1965, and at the University of Washington in Seattle in 1966. He completed a Master of Fine Arts in painting at the Cranbrook Art Academy in Bloomfield Hills, Michigan in 1968.

Anderson was an art teacher in Tacoma at Foss High School before launching his career as a sculptor. His first major work was "The Leaf" (1975). This was followed by "Trilogy" (1978). Both sculptures were commissioned by the City of Tacoma and are situated in Wright Park. Many other public sculptures are located in Tacoma. They include "Clearing the Way" in Fireman's Park, "New Beginnings" in front of Union Station, and "Coming Home" at South 56th and South Tacoma Way, all in 1984, Tacoma's centennial year. Others in Tacoma include "The Second Touch," a fountain figure at MultiCare Medical Center (1981), "A Fish Story" in front of Slovonian Hall in Old Town (2002), and "We Honor a Hero" on North I Street at Lowell Elementary (2003).

Major works in the U.S. include "Springfield's Lincoln," an ensemble of statues of Abe and Mary Lincoln and two of their boys in Springfield, Illinois (2004); and "Continuum," with seven distinct life-size sculptures of people and animals, at Purdue University School of Veterinary Medicine in West Lafayette, Indiana (2000).

Anderson's many bronze sculptures, over 70 in all, comprise a huge legacy of full-size figures and portrait busts. His paintings and drawings are also voluminous and include both realistic and abstract expressionist works.

Anderson not only leaves an inspiring legacy of fine art, but his high-school sweetheart and beloved wife of 56 years, Sharilyn Lea (Hoard) Anderson, two daughters, one son and three grandchildren. The family traveled extensively, and lived abroad in both Austria and France. ❑

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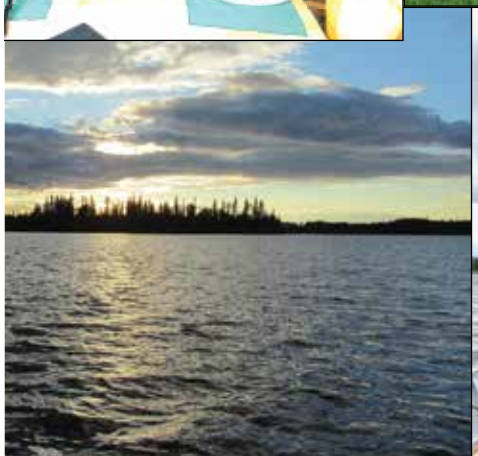

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