TWIN & TURBINE®

FOR THE PILOTS OF OWNER-FLOWN, CABIN-CLASS AIRCRAFT

JULY 2017 $3.95 US

VOLUME 21 NUMBER 7

EAA AirVenture 2017 Special Edition

Blue Angels Perform at OSH for the First Time

EAA's Jack Pelton Talks Oshkosh

B-29 Superfortress "Doc"

Ready for OSH: Precision Landing Techniques

CAF Red Tail Squadron Back in the Air

CJ FAMILY

INNOVATION.
PERFORMANCE.
LEADERSHIP.

GO WHERE YOUR VISION TAKES YOU

There's a smarter way to move your business and your family. From Chicago to Key Largo or anywhere between, the Cessna Citation CJ Family delivers time-saving mobility and access to thousands of small airports. All three aircraft have a common type rating, making it easier and more efficient than ever to grow with your business. **Learn more at Cessna.com.**

U.S. **+1.844.44.TXTAV** | INTERNATIONAL **+1.316.517.8270**

Cessna
TEXTRON AVIATION

Contents

July 2017 • VOL. 21, NO. 7

TWIN & TURBINE

EDITOR
Dianne White
(316) 213-9626
editor@diannewhite.com

EDITORIAL OFFICE
2779 Aero Park Drive
Traverse City, MI 49686
Phone: (660) 679-5650
E-mail: *editor@diannewhite.com*

PUBLISHERS
J. Scott Lizenby
Dave Moore

PRESIDENT
Dave Moore

CFO
J. Scott Lizenby

PRODUCTION MANAGER
Mike Revard

PUBLICATIONS DIRECTOR
Jake Smith

GRAPHIC DESIGN
Brett Sanders

TWIN & TURBINE WEBSITE
www.twinandturbine.com

ADVERTISING DIRECTOR
John Shoemaker
Twin & Turbine
2779 Aero Park Drive
Traverse City, MI 49686
Phone: 1-800-773-7798
Fax: (231) 946-9588
johns@villagepress.com

ADVERTISING ADMINISTRATIVE ASSISTANT & REPRINT SALES
Betsy Beaudoin
Phone: 1-800-773-7798
betsybeaudoin@villagepress.com

SUBSCRIBER SERVICES
Rhonda Kelly
Diane Smith
Jamie Wilson
Molly Costilo
Lisa Anderson
Kelly Adamson
P.O. Box 968
Traverse City, MI 49685
1-800-447-7367

COVER PHOTO
Photo by Glenn Watson
All three aircraft served as U.S. Navy Blue Angels demonstration aircraft. From top: Grumman F6F Hellcat (flown by Steve Barber), Grumman F8F Bearcat (flown by Ken Gottschall), F/A-18 Hornet (flown by #5 Lead Solo Commander Frank Weisser)

Issues of Twin & Turbine are available for free
www.twinandturbine.com

POSTMASTER: Send address changes and inquiries to Twin & Turbine, Village Press, Inc., P.O. Box 968, Traverse City, MI 49685.

Twin & Turbine (ISSN 1945-6514), USPS 24432 is published monthly by Village Press, Inc. with advertising offices located at 2779 Aero Park Drive, Traverse City, Michigan 49686. Telephone (231) 946-3712. Printed in the United States of America.

Periodical Postage Paid at Traverse City, MI.

SUBSCRIPTIONS: *Twin & Turbine* is distributed at no charge to all registered owners of cabin-class aircraft. The mailing list is updated monthly. All others may subscribe by writing to: *Twin & Turbine,* P.O. Box 968, Traverse City, MI 49685, or by calling 1-800-447-7367. Rates for the United States and its possessions follow: one year $29.95; two years $52.50. Canadian subscriptions are $15 per year additional, including GST tax. Overseas subscriptions are $30 per year additional, U.S. funds. Single copies $3.95.

ADVERTISING: Advertising in *Twin & Turbine* does not necessarily imply endorsement. Queries, questions, and requests for media kits should be directed to the Advertising Director, *Twin & Turbine,* P.O. Box 968, Traverse City, Michigan 49685. Telephone 1-800-773-7798. Website: *www.twinandturbine.com*.

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

Only at Oshkosh

It was the afternoon of Monday, July 25, 2016, and the first day of the AirVenture Oshkosh air show. Having just arrived, my husband and I hustled our way closer to flight line to watch a massive red-and-white Martin JRM Mars water bomber line up for a low pass. As the last one of its type still flying, the "Hawaii Mars II" was used to fight fires in Canada, and before that, served as a Navy long-range patrol aircraft.

With its four massive Wright Cyclone 2,500-hp radial engines roaring, the Martin Mars lumbered along a few hundred feet over the field, so large that it seemed suspended. As the plane approached midfield, the pilot released 7,200 gallons of Lake Winnebago water on Runway 36, creating a dramatic white curtain of spray across the sky. After watching the spectacle with mouths agape, we turned to each other said the three words thousands of other AirVenture attendees have uttered for decades:

"Only at Oshkosh."

Whether it's your first trip or your 25th, AirVenture 2017 promises to offer something that you have never seen before. In some cases, you may never again. Here's a few Oshkosh "specials," that you'll surely want to see:

- The Blue Angels. 'Nuff said.
- *FIFI* and *Doc* flying together. As the only two B-29's still flyable, a flight of two B-29s hasn't happened for decades. Other big bombers will be there as well, including more than a dozen B-25's, a B-52 Stratofortress and B-1 Lancer.
- The lone remaining veteran of the famed Doolittle Raiders present to celebrate the 75th anniversary of the daring WWII mission. On the evening of July 26, 101-year-old Dick Cole, who was co-pilot for Lt. Col. James Doolittle in the lead aircraft, will be honored.
- A field of yellow Piper J-3 Cubs in celebration of the type's 80th anniversary. Nearly 100 will arrive en masse Sunday, July 23.
- C-123 Thunder Pig, one of the few remaining, only one flying and an unsung hero of the Vietnam War.
- We've all seen plenty of Cessna 172s (more than 40,000 were built). But the very first one, Serial No. 1, has been newly restored and will be on display.
- Space heroes from the Apollo program, including Buzz Aldrin, Jack Schmitt, Frank Borman, Walt Cunningham, Fred Haise, Jim Lovell and Al Worden. All will attend an Apollo reunion Friday, July 28, at Theater in the Woods.
- The only flying Douglass A-20 Havoc. More than 7,000 of the twin-engine light bomber were built, but only a few survive.
- 10th anniversary of WomenVenture. The goal with the first event was to take a photo of the world's largest gathering of female pilots. This year, in addition to the photo, EAA will host the first WomenVenture Social Monday, July 24, where attendees can meet and network with like-minded women.
- Less traditional forms of aviation at Twilight Fest. On Monday, Tuesday, Thursday and Friday evenings, you can watch STOL flying, a variety of fixed-wing ultralights, gyroplanes and RC planes. It all takes place at the Fun Fly Zone.
- Barenaked Ladies. We're talking about the band, which will perform at the opening night concert.

As my husband and I approach our 25th anniversary of attending Oshkosh, it's fun to reflect on the many adventures and trips "behind the cheddar curtain" to attend the greatest air show on earth. We've made the trip in a number of different aircraft over the years; once I even caught a ride home in a Beech Starship. We've collected many funny stories and memories of things we saw and did at Oshkosh. But more than anything, it's a warm, wonderful place where we can join up with our aviator friends, find a cold drink and take up right where we left off.

Those moments truly are "only at Oshkosh."

Dianne

Global Inflight Connectivity for All Ages

Pilots and passengers will appreciate the affordable, global inflight connectivity provided by AeroWave™ from BendixKing.

Crews will now have inflight access to global weather services, voice, text, email and their favorite connected aviation apps. Plus passengers will enjoy the ability to send and receive emails and text messages, browse simple web pages, make and receive phone calls and more.

AeroWave's low-cost connectivity service plan is based on prepaid hours of use — not the amount of data used — so there are no billing surprises. Airtime is only $40 USD per hour, and unlike other services it works at any altitude all over the world. It's that simple.

Don't leave your favorite apps on the ground anymore. Find out how to get globally connected today.

Voice | Global Weather | Email | Flight Tracking | Text

BendixKing

To learn more, call 1.855.250.7027, contact your local BendixKing dealer or visit **aerospace.honeywell.com/AeroWave**.

PHOTO: JIM KOEPNICK

B-29 Superfortress *FIFI* overflies Oshkosh Airventure.

EAA AirVenture 2017

Preview of the world's greatest air show

by **Rebecca Groom Jacobs**

"Wow, you're a pilot? Aren't you afraid of those little planes? Is it expensive?"

For one week, every year, there is magical place where questions like these stop at the gate. Because for that one week, every year, the world's greatest collection of aircraft and aviation enthusiasts come together to celebrate EAA AirVenture – most often known simply as Oshkosh.

"As aviation geeks, we spend so much time explaining to our neighbors and friends about airplanes and why we fly," said Dick Knapinski, EAA Director of Communications. "But you come here, and everyone speaks the language."

This year, EAA AirVenture takes place July 24 through July 30. Read on for the main attractions, hidden gems and insider tips.

Can't-Miss Attractions

One of the main events at AirVenture this year is the 50th anniversary celebration and reunion of the Apollo program taking place Friday, July 28, at the Theater in the Woods. The event is expected to be the largest gathering of Apollo astronauts at AirVenture since the Salute to Apollo program in 1994.

Ten astronauts including Buzz Aldrin and Jim Lovell will be in attendance along with other Apollo program affiliates from mission control and engineering. This will be an extremely rare opportunity to hear firsthand stories and experiences as they reflect on the times during the great space race. Former Good Morning America host David Hartman will be hosting the event.

You'll want to arrive early that Friday – and not just for a good seat. Members of the Blue Angels will make a public appearance at Theater in the Woods just prior to the Reunion program (further details and additional Blue Angel public appearances planned, but not yet announced).

This will be the Blue Angels' first year performing full demonstrations at AirVenture. They will fly their full show Friday and Saturday. Special crowd lines will be in effect, similar to those in place for the Canadian Forces Snowbirds last year. If you will not be in attendance during the weekend, you might still catch team members performing orientation flights earlier in the week (note special TFR regulations during those times).

This year also marks the 75th anniversary of the Doolittle Raid, a WWII operation integral to boosting American morale following the attack on Pearl Harbor. On April 18, 1942, 16 B-25 bombers departed a U.S. aircraft carrier on a daring mission to bomb military sites in Japan, and were successful in doing so, but afterward forced to land in China and surrounding areas for lack of fuel. Incredibly, the majority of the 80 crewmembers survived and were able to return to the United States.

Show activities commemorating the people and aircraft involved in the Doolittle Raid will include a whopping 16 B-25 bombers flying in the warbirds air show Tuesday, an evening program with Dick Cole (last remaining veteran of the famed Doolittle Raiders) and a re-enactment of the Doolittle Raid to kick off the night air show Wednesday night.

Continuing the theme of WWII bombers, the fully restored B-29 Superfortress named *Doc* embarked on its first air show tour this year and will make a stop in Oshkosh to join *FIFI* – the world's only other flying B-29, operated by the Commemorative Air Force (CAF). This will be the first time in 60 years that two flying B-29s will share a ramp.

Doc is expected to arrive at AirVenture Friday, July 21, and remain the length of the show. A number of special flights will occur over the course of the week, but certainly one of the main sights will be when *Doc* shares the sky with *FIFI*. It is suspected that no one has seen two B-29s fly in formation since 1956.

Other events worthy of noting include a tribute to Bob Hoover on opening day, a performance by the Barenaked Ladies opening night, the 10th annual WomenVenture gathering, a 25th anniversary celebration of the Young Eagles program, and a presentation by Uber regarding its endeavor with autonomous airplanes.

"One of the fun things about AirVenture, it not only pays tribute to what people are doing now or the heritage of aviation, but it also addresses what's next," said Knapinski. "From flying cars, to rockets, to drones, what is our airspace going to look like 10 to 15 years from now?"

Aircraft Highlights

Last year, more than 10,000 aircraft flew to AirVenture. Whatever area or niche of aviation holds your interest, chances are you'll find numerous instances of it present at the show.

According to EAA, special aircraft to look out for this year include: a F-86 Sabre, P-47 Thunderbolt, B-29 Superfortress (2), Douglas C-47, Extra 330LE (electric), Boeing YL-15, Fairchild C-123K Provider (aka Thunder Pig), B-25 Mitchell fleet, Supermarine Spitfire Mk IX, Douglas SBD Dauntless, Piper J-3 Cub fleet (80th anniversary), Bell P-63 Kingcobra, F-35 Lightning II, Douglas A-20 Havoc and Cessna 195 fleet (70th anniversary).

And these are sure to only be a handful of the collection. Every year, additional rare or recently restored aircraft make a surprise appearance.

"If it has flown, is flying or will fly, it will come to Oshkosh at some point," added Knapinski.

PHOTO: GLENN WATSON

Hidden Treasures

For many of us in the pilot community, we have now worked and/or attended EAA five, 10 or even 15-plus years. We've developed our patterns – exhibits to visit, things to do and people to see. But it's key to not fall into a rut of comfort if you can help it. There are several hidden gems on (and off) show grounds. To name a few:

Seaplane Base If you want to witness this lesser-known facet of flying, all it takes is a quick, inexpensive ride on the shuttle. The seaplane base is just 5 miles down the road. More than 100 seaplanes take off and land at Lake Winnebago during the week of Oshkosh. Allow yourself a break from the heat and spend a few hours or a half day visiting this shady little treasure.

EAA Museum Regular air show admission includes access to the EAA Aviation Museum – a collection of more than 200 historic airplanes and rare exhibits. A special, temporary exhibit this year is the CAF's rare WWII Nose Art collection. More than 30 pieces of nose art from WWII combat aircraft will be on display. If you're looking for kid-friendly activities, the museum is also a great stop.

Ultralight Strip Nestled on the south side of the grounds, near the Vintage aircraft, you'll find a grass strip home to the ultralights (powered parachutes and trikes, hot-air balloons, homebuilt rotorcraft and light-sport aircraft). Make your way over there either first thing in the morning or in the evening post-air show and you'll be able to watch the action.

Drone Area An area newer to the EAA grounds is the Drone Cage at Aviation Gateway Park. UAV pilots can come here to test their skills by bringing their own drones. Observers can watch from the viewing platform and/or the live video feed.

Rock Your Wings

Planning to fly yourself to AirVenture? Give the NOTAM a thorough review. Preparedness and efficiency are key in moving 10,000-plus airplanes safely in and out of the "World's Busiest Airport." You can find the 2017 NOTAM downloadable via the EAA website or ForeFlight. It is also a good idea to have a printed version of the procedure allowing you to highlight key information.

MMOPA 2017 FLY-IN CONVENTION

SEPT. 13-17, 2017 · CHARLESTON MARRIOTT

The Can't-Miss Event of the Year for PA46 Owners

27th Annual Fly-In Convention
MMOPA™
2017 Charleston, SC

HIGHLIGHTS INCLUDE:

- Safety seminars
- Tom Poberezny, EAA Chairman Emeritus
- Flying to Cuba seminar
- Maintenance & avionics sessions
- Airport Day at Charleston Executive (KJZI)
- Dinner on the USS Yorktown
- Pre-convention tours of local attractions
- Fun, engaging itinerary for companions

Only one event in the world is 100-percent tailored to the needs and interests of PA46 owners: the 2017 MMOPA Fly-In Convention. This year's event promises to deliver more....more great content, top-tier speakers and opportunities for networking with other PA46 owners.

If you are serious about safety and operating your PA46 at its best, you'll want to attend this once-a-year, information-packed event. **Members and nonmembers welcome!**

For more information and to register, go to: **mmopaevents.com**

MMOPA™

Malibu/Mirage Owners & Pilots Association | mmopa.com | 203-303-7851

A few adjustments to the NOTAM this year include a TFR Friday morning from 10 a.m. to 11 a.m. (Blue Angels orientation flight), changes to surrounding MOA's and taxiways, aircraft camping at Appleton, alterations to IFR routing and IFR airport Special Traffic Management Program.

The ATC-preferred, and most widely used, method of arrival into KOSH is the famed Fisk VFR arrival procedure. Starting Friday, July 21 and extending through Sunday, July 30, all non-turbine powered GA aircraft arriving into KOSH must follow the Fisk VFR Arrival. For those flying a turbine aircraft, you will follow the Turbine/Warbird arrival can also be found in the NOTAM.

Within 30 nm from the Oshkosh airport, all VFR aircraft must turn off their mode C transponder and proceed to the town of Ripon (that's RIPON fix in your GPS), a mere 15 nm southwest of KOSH. Aircraft capable of safely flying at 90 kts should maintain that speed and approach the town at 1,800 feet. Aircraft that are unable to fly at 90 kts should approach Ripon at 2,300 feet.

When landing, ATC may request you execute a short approach to touch down on one of two to three color-coded dots located laterally down the runway. All communications are one-way: ATC issues instructions in rapid-fire succession and it's critical pilots are listening carefully. At times, they may tell an aircraft to "rock your wings" in acknowledgement. Precision is required as other aircraft will be touching down ahead of and behind you at peak traffic times. Aircraft weighing less than 6,000 pounds will be expected to exit the runway into the grass to make room for the next arrivals.

Your reward for a skillful execution of this complicated procedure? A friendly voice over the radio saying three magical words: "Welcome to Oshkosh!" T&T

Rebecca Groom Jacobs is a private pilot and general aviation enthusiast. In 2012, she earned her business degree in marketing from Oklahoma State University. Since then, she has specialized in aviation-specific marketing, working first for Piper Aircraft, and then as an aviation marketing specialist at Sullivan Higdon & Sink. Jacobs is now serving as the Director of Communications at the consultingfirm Groom Aviation. You can contact Rebecca at rebecca@groomaviation.com

Themes of the Week

Monday, July 24: Opening day and a tribute to legendary aviator Bob Hoover.

Tuesday, July 25: Innovations Day and 25th Anniversary celebration of the EAA Young Eagles program.

Wednesday, July 26: 75th Anniversary of the famed Doolittle Raiders mission and the annual WomenVenture activities.

Thursday, July 27: 90th Anniversary of Charles Lindbergh's solo flight over the Atlantic Ocean, and a look to the world's future in space.

Friday, July 28: An Apollo space program reunion and EAA's Annual Salute to Veterans Day.

Saturday, July 29: Bomber Day, a parade of bomber aircraft from throughout military history, plus an observance of the 8th Air Force's 75th anniversary.

Sunday, July 30: Fox Valley Day, a thank-you to the Oshkosh region for the support of The World's Greatest Aviation Celebration held in Oshkosh since 1970.

Tips For First-Timers

- Be prepared and read up, especially on the office website www.airventure.org;
- Utilize the EAA website and social media;
- Allow yourself a few days at the show, you can't cover it in one day;
- Plan ahead for lodging – house rental, hotel, campground, etc.;
- Bring along comfortable shoes, hat, sunscreen – you're in for a lot of walking;
- Grab a map to plan route and prioritize what you're interested in;
- Use resources: maps, daily show newspapers and visitors guide available.

EAA's Jack Pelton Talks AirVenture 2017

Event chairman shares changes and special events we can expect at this year's show, as well as planes he can't wait to see on the grounds.

by **Dianne White**

With the final countdown underway to AirVenture 2017, EAA staff are working double-time to ensure the grounds, programming and exhibits are ready for the greatest air show on earth. *Twin & Turbine* was fortunate to catch up with Jack Pelton, EAA chairman of the board and CEO, to get a sneak peek of what attendees can expect at this year's show, as well as aspects as an owner-pilot he is looking forward to seeing and experiencing.

Twin & Turbine: AirVenture 2017 is shaping up to be yet another spectacular show. Among all of the celebrations, milestones and performances, what are you most personally excited about?

Pelton: AirVenture 2017 is going to be another incredible week of what we like to say, "Only at Oshkosh" attractions. It is always hard to say what I am most looking forward to. That said for this year my personal top 5 would be.

1. The celebration of the 25th anniversary of the Young Eagles program is a very special recognition to our volunteers who fly and support this initiative. I cannot think of any program that has done more for so long in introducing young people to flying. With over 7,000 pilots donating their time and planes along with 12,000 more helping organize the rallies, every year, this typifies the volunteer spirit Paul Poberezny created in founding EAA.

2. The gathering of the Apollo astronauts and crews will be memorable. This could be the last public gathering of the remaining Apollo astronauts. It was a time where America showed there was no challenge too large for us as a nation to conquer. The added excitement for me was the fact that I grew up in Downey, California where the Apollo capsule was designed and built. So that entire program was very close to home in many ways.

CALL NOW ABOUT OUR NEW "EXPRESS RECURRENT"

DESIGNED BY PILOTS FOR PILOTS
TAILORED TO YOUR
SPECIFIC NEEDS

Max Nerheim
Cessna 421C Owner/Pilot
SIMCOM Customer

HIGH, HOT AND HEAVY DEPARTURE
LEFT ENGINE UNSTABLE
OIL PRESSURE ZERO

FAMILY ON BOARD.

I was ready.

**"Knowing what to do and when to do it—
that's the value of simulator training."**

Watch the video of Max Nerheim describing his in-flight experience at simulator.com.

SIMCOM®
AVIATION TRAINING
VALUE. PERSONALIZED. FRIENDLY.

...Nothing Prepares You Like Simulator Training.

Visit SIMCOM's website at **simulator.com**

EXPRESS CALL NOW RECURRENT

866.692.5295

3. Having the B-29 *Doc* from Wichita, Kansas make its largest public debut will be very exciting. Couple that with it flying side-by-side with *FIFI* for the first time, during the air show, will be another incredible sight. The line-up of bombers supporting these two B-29's is also very impressive. A B-1, B-2, B-52, B-17 and 16 B-25's celebrating the 75th anniversary of the Doolittle raid will be the icing on the cake.
4. Always a crowd favorite at other air shows is the Blue Angels. Now for the first time we are honored to have them flying at Oshkosh. It will be a thrilling display.
5. Paul always said we come to Oshkosh for the planes and come back for the people. The best part is always gathering with members, friends, and this year all three of my grandsons to enjoy the aviation event in the world.

Twin & Turbine: The Blue Angels are making their first appearance at AirVenture (GO NAVY!) What are the challenges (and joys) of hosting our country's elite military demonstration team?

Pelton: What many people don't know is that to host a military demonstration team requires a much larger aerobatic "box" then a typical air show. That is why AirVenture has not hosted teams in the past. It requires businesses and residences on the east side of the field to have to vacate during the performance. We cannot ask these businesses and residences to do that year after year. And quite frankly if any person says no, we cannot have the performance. As a result, we must coordinate years in advance to gain the cooperation of those impacted in order to invite a military demonstration team.

On top of that the Blues require their own standard operating procedures that usually requires them to fly a full show for four days. To preserve the diversity of acts in our air show we could not give up all four days to the Blues. They were over the top accommodating to fly just Friday and Saturday in order to come. As you can imagine this was such a wonderful gesture and we are thrilled that our members will as a result get to see the Blues at Oshkosh. We also recognize that with the Blue Angels being such a draw that many people who have never experienced AirVenture will attend for their first time and learn what EAA is all about.

Twin & Turbine: What particular aircraft you are looking forward to seeing parked on the AirVenture grounds this year?

Pelton: I am a little biased this year in that it is the 70th anniversary of the Cessna 190/195 so I hoping to see 70 190/195's in vintage parking. The only flying A-20 will be down in warbirds parking, which is very rare. With the 40th anniversary of the Christian Eagle this year I am also anxious to see a large number of Eagles parked in the homebuilt area. That plane set the gold standard for kit-built aircraft with the way it was brought to market in a series of kits and builder manuals.

Twin & Turbine: What improvements or changes have been implemented this year to make the weeklong event even better?

Pelton: On the grounds this year we have been investing a lot to keep improving the experience. The facilities are being upgraded. More improved campsites with electrical power have been added. The Vintage Red Barn has been enlarged, Theater in the Woods has been upgraded and modernized, and a permanent gathering pavilion has been built in the homebuilt camping area. Similarly, a permanent building for Young Eagles and Chapters has been added across from the forum area that we are calling the Blue Barn. We continue to evolve the Innovations Pavilion by bringing the latest in new technologies and concepts. We are excited that the Kitty Hawk ultra-light that many are seeing on YouTube will be there and flying at the seaplane base.

Twin & Turbine: EAA has added its voice in opposition to the proposed ATC privatization plan. In your mind, what is the No. 1 reason this would be a bad idea for GA?

Pelton: The No. 1 reason privatization of the ATC system is a bad idea is that, in this approach to fix a problem that does not exist, there will be unintended consequences. There is not a privatized system in world that did not add cost to GA users and reduced access. This concept is being pushed by the airlines for their benefit. We in the GA community will lose our support of congressional oversight to ensure all users' voice is heard. It creates a private monopoly that as a result is not in the best interest of all public users. We all need to make sure your local elected officials understand this. T&T

JetBed™

The World's Best Aviation Sleep System.

Finally!
The Gulfstream 650
Crew Rest is now available!

Patent Pending

Current JetBed Availability

Bombardier
C300, C350, C600 Series, Conference Group, Learjet 40 Series, Learjet 60, Global Express (5000, 6000, 7000, 8000)

Cessna
CJ, CJ1, CJ1+, CJ2, CJ2+, CJ3, CJ4, XL, XLS & XLS+, Ultra, Encore, Encore+, Citation X, Citation Sovereign, Citation Mustang

Dassault
F2000, F900, F7X, Falcon 50, Conference Group

Embraer
Phenom 100 & 300, Legacy 600 Series Legacy 600/650 Conference Group

Gulfstream
G200, G280, Galaxy, GIV, G450, GV, G550, G650, G650, G650 Double Bed, G650 Crew Rest, Conference Group, GV Crew Rest, G550 Crew Rest, Conference Group

Hawker
XP Series

King Air
350i

Pilatus
PC-12

Member of NBAA

US Patent No. 7,845,718B1

- Custom divan JetBeds for most applications available on request.
- Custom JetBeds for VVIP aircraft such as Boeing, Airbus and Lineage 1000 available on request.
- Meets or exceeds FAR-25-853a standards for flammability and ISO 9000 standards of quality.
- Single models weigh less than 20lbs and setup for use in 1 minute

Order Now!: www.Jet-Bed.com Office 858-530-0032
858-395-6888 sales@jet-bed.com

CAF Red Tail Squadron is Back in the Air

by **Dianne White**

Photos by Adam Glowaski

One of the guiding principles of the CAF Red Tail Squadron honoring the Tuskegee Airmen is "never quit." After the organization's centerpiece aircraft, a P-51C Mustang with its distinctive red tail, was involved in a landing mishap in February 2016, it became the rallying cry for the nearly year-long rebuilding and restoration process.

Two hundred, eighty-seven days and 3,000 man-hours later, the Red Tail Mustang took flight once again on Dec. 1, 2016 and is now back telling the Tuskegee Airmen story at air shows across the country. Although the plane will not be at AirVenture 2017, the Red Tail Squadron "Rise Above" traveling exhibit that will be featured in the KidVenture exhibits at Pioneer Field during Oshkosh.

The meticulous restoration was completed at Odegaard Wings and Aircorps Aviation in Bemidji, Minnesota, where warbird experts repaired, restored and re-assembled the Mustang. By November 2016, the aircraft and engine were ready for its first engine test run. After the rest of the repairs were made, Red Tail Squadron Leader Doug Rozendaal completed the test flights and delivered it to Flying Colors Aviation where a striking new paint job was completed.

The Red Tail Squadron got its start in the early 2000's when Minnesotan Don Hinz wanted to build a program to educate youth about

the Tuskegee Airman, the all-black squadron in World War II that proved its ability fly as well as — possibly better than — many of the white pilots of the day. As a subset of the Commemorative Air Force (CAF), the Red Tail Squadron is a tribute to the pioneering airmen and a tool to tell their story to thousands of kids across the country.

The CAF Red Tail Squadron's program has three main components: 1) The P-51C Mustang, 2) A 53-foot mobile theater and traveling exhibit, which features the panoramic film "Rise Above," and 3) A plethora of printed and online resources for teachers and youth leaders to bring the lessons of the Tuskegee Airman alive for youth. Throughout all of its activities, the Squadron promotes its six guiding principles, which were based on the experiences and successes of the Tuskegee Airmen: aim high, believe in yourself, use your brain, be ready to go, never quit, and expect to win.

Over the course of six months – June through October – the Squadron travels to air shows across the country.

The Red Tail Squadron needs continuous support to carry out its important educational mission. To learn more, donate or volunteer, visit *www.redtail.org.* Also, check out its schedule to catch the Red Tail P-51C Mustang at a location near you. T&T

PHOTO: BRETT SCHAUF – VISUAL MEDIA GROUP

B-29 Superfortress *Doc* Receives a Hero's Welcome

by **Rebecca Groom Jacobs**

Less than a year after its first flight, the recently restored B-29 Superfortress named "*Doc*" made its much-anticipated public debut at the Defenders of Liberty Air Show in Barksdale, Louisiana May 5 through 7. This was the first stop on its tour, with at least four more expected in 2017 (EAA AirVenture included).

The warbird's presence at Barksdale Air Force Base was especially significant as it was the B-29's first assigned base after being built in Wichita in 1945.

"To be able to fly *Doc* back to where it was originally assigned was incredible," said Josh Wells, spokesperson for *Doc*'s Friends, the nonprofit organization managing the B-29. "Not only was the local community excited, but we talked to people from Texas, Missouri, Arkansas, even Canada. It was clear droves of people were there to see the restoration they have been following online for so many years."

The weekend saw record-breaking attendance, with more than 170,000 aviation enthusiasts assembling at the base, several thousand actually being turned away from the free event due to capacity concerns by show officials. Other attractions included performances by the U.S. Navy Blue Angels, aerobatic pilot Michael Goulian and a sizable collection of military aircraft.

During the show, *Doc* participated in a series of flights including a Boeing heritage flight displaying a B-17 Flying Fortress, B-25 Mitchell, B-29 Superfortress (*Doc*) and B-52 Stratofortress in formation. The crew says the airplane performed beautifully. An impressive feat considering the warbird's first flight in 60 years took place in July of last year following its extensive 16-year restoration.

Later this month, *Doc* is expected to arrive at EAA AirVenture Friday, July 21, and remain the length of the show. A number of flights will occur over the course of the week, but certainly one of the main events will be the opportunity for *Doc* to share the sky with *FIFI* – the world's only other flying B-29, operated by the Commemorative Air Force (CAF).

"No one since 1956 has seen two B-29's fly in formation," said Jim Murphy, project manager for *Doc*'s Friends. "It will be very emotional."

Between flights, *Doc* will be on static display in the Boeing Centennial Plaza where *Doc*'s Friends will be selling cockpit tours, photos and merchandise. All proceeds go directly toward helping cover the airplane's operating and touring expenses.

Doc's Friends continues to also raise funds for a permanent hangar, to be based at Wichita's Dwight D. Eisenhower National Airport. The budgeted goal is $6.5 million, and the group is reportedly halfway to obtaining that amount. The structure will serve as both an active hangar and a hands-on learning center, currently dubbed the "B-29 *Doc* Education Center."

"We want the public to be able to come in and see, touch and feel the technology and engineering that went into building this airplane," said Wells. "The purpose of this project has always been to connect generations and help keep the memories alive."

Currently, *Doc* is being operated by crew from the only other flying B-29, *FIFI*. The crew made several trips to Wichita over the last year to work closely with *Doc's Friends* restoration team leading up to the tour. But soon, a local Wichita-based crew will be trained and certified to operate the airplane independently – allowing for easier operation as the touring schedule magnifies in coming years.

It is projected rides on B-29 *Doc* will be available for sale in 2018. *Doc's Friends* is already working with the FAA on the paperwork and requirements to achieve the appropriate certification and insurance to carry passengers.

If you would like to support *Doc's* mission and ensure it stays in the air, here are ways you can help:

- Donate directly — via the *Doc's* Friends website (Paypal) or mail (P.O. Box 771089, Wichita, KS 67277).
- Purchase *Doc* merchandise — shirts, hats, first flight memorabilia and more are available online via Yingling Aviation's gift shop, Aviator's Attic.

To stay up to date on all *Doc* news, subscribe online at *b-29doc.com* or follow *Doc* on Facebook (*facebook.com/docsfriends*) and Twitter (*twitter.com/docsfriends*). T&T

Rebecca Groom Jacobs is a private pilot and general aviation enthusiast. In 2012, she earned her business degree in marketing from Oklahoma State University. Since then, she has specialized in aviation-specific marketing, working first for Piper Aircraft, and then as an aviation marketing specialist at Sullivan Higdon & Sink. Jacobs is now serving as the Director of Communications at the consulting firm Groom Aviation. You can contact Rebecca at rebecca@groomaviation.com

Ready for OSH: The Third Degree

Precise speed control matters in achieving predictable touchdown point. No time is that more crucial than when landing at the at the world's busiest GA airport in late July.

by **David McVinnie**

AirVenture is the "Holy Grail" pilgrimage nearly all pilots dream about. The controllers are beyond incredible as they safely manage thousands of operations, but they sometimes have high expectations. If the arrival does not go as planned, the go-around process is clearly spelled out in the NOTAM and includes specific details on what to do if the pilot is not comfortable. Note: the controllers handled approximately 22 departures in the 13-minutes prior to the event so "busy" seems hardly adequate.

On July 22, 2016, a Piper Malibu entered the right downwind for runway 27. The controller instructed the pilot to turn base "abeam the numbers" (actually the orange dot) and land on the green dot, about 2,500 feet down the runway. They cleared a twin Cessna to depart and instructed the pilot to "roll it around the corner and scoot!"

The controller amended the Malibu's clearance and requested he land on the orange dot. It's located about 1,500 feet "before the green dot" and actually coincides with the "previous" turn abeam point location. Try to visualize turning base abeam the numbers and then trying to land on the numbers. From the NTSB final report (CEN15FA311) "The pilot considered doing a go-around, but decided to continue the approach. He reported that about 250 to 300 feet above ground level, he pulled back on the power which resulted in the airplane entering a stall. He attempted to recover by adding full power, but the airplane impacted the runway in a right wing low, nose down attitude." Three serious injuries.

If nothing else, flying is a dynamic environment and pilots pride themselves in their ability to adapt. Our willingness to bite off more than we can chew can cost us dearly, but it's not uncommon to assume a controller would never ask us to do something beyond a normal operation. NEVER be afraid to say "UNABLE."

Short-Field Landing & Stabilized Approaches

The young applicant was attempting to perform a short-field landing near the end of his commercial multi-engine check ride. We'd already completed the single-engine work and if he got this right, he'd pass the ride. His pattern was good as he turned base. Flaps set, hand on the throttles. Without warning, he pitched up and leveled off. The airspeed dropped 10-knots and as he crossed the threshold, he pulled both throttles to full idle and pushed the nose over hard. Hard also described the landing, and the PTS "at or within 100-feet" metric became irrelevant.

During the debrief, I offered him the opportunity to explain what happened. Seems he leveled off to ensure he "crossed the 50-foot obstacle" per the maneuver description. The check ride was over at that point, so I decided to review the differences between a "short field" landing and a stabilized approach.

A stabilized approach is one in which the pilot establishes and maintains a *constant angle* glide-path toward a predetermined point on the landing runway. An aircraft descending on final approach at a *constant rate and airspeed* travels in a straight line toward a spot on the ground ahead.

In a textbook approach, the aircraft crosses the runway threshold (the fence) at V_{ref} on a 3-degree descent angle. If all goes well, you have about 8 seconds from the time you cross the threshold until touchdown. Just think how many landings it takes to get one minute of practice.

V_{ref} is defined as 1.3 times the stall speed in the landing configuration adjusted for weight. You can fiddle with it a bit by adding half the gust factor. Most pilot operating handbooks, including Piper's, only include landing distance information for the maximum landing weight. Since 1.3 V-stall will always occur at the same angle of attack, you can account for changes to V_{ref} due to weight by using a conservative estimate of subtracting 1 knot for every 100 pounds below the maximum landing weight. As an added benefit, for every knot you subtract, you reduce your total landing distance between 100 and 150 feet. For a landing weight 400 pounds below gross, that's between 400 and 600 feet of float. If you're light and fast, the additional landing distance adds up quickly. More advanced aircraft compute the actual weight based on payload and fuel burn. It's the only way you can achieve the published performance numbers.

Figure 1: In a textbook approach, the aircraft crosses the runway threshold (the fence) at V_{ref} on a 3-degree descent angle.

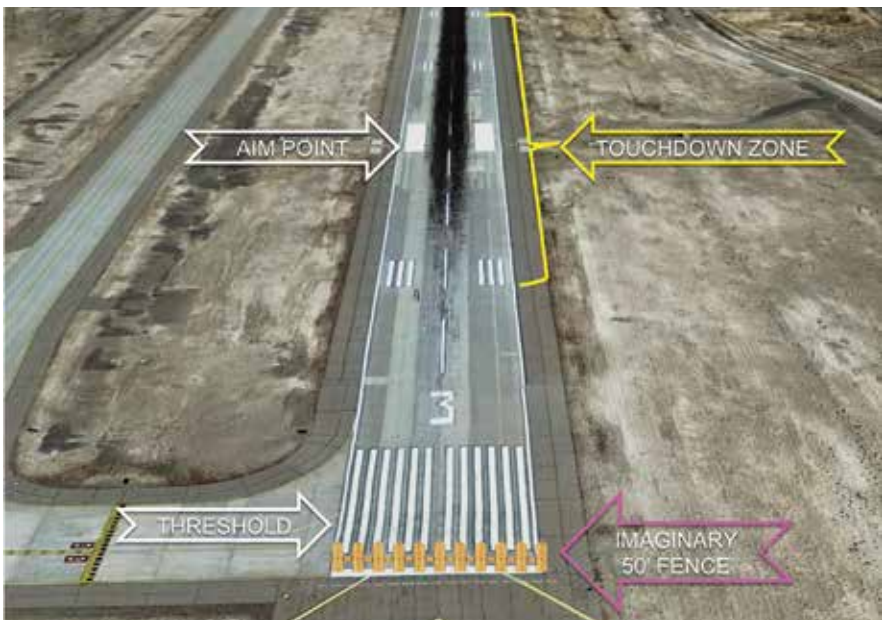
Landing distances are based on a 3-degree approach at V_{ref} and accept that the aircraft is not touching down on the first brick, rather at about 1,000 feet from the threshold.

As the Figure 1 shows, the aircraft will level off and "float" as it dissipates the remaining energy. The combination of speed and ground effect work together to balance the power reduction. If the reference airspeed (V_{ref}) is correct, the float will be minimal. If your speed is high, you'll float as it dissipates. If you're slow, there won't be any float and you'll make that airplane-shaped smudge on the runway. Over-rotation is another concern. Excess speed allows the aircraft to climb (balloon) if you over-rotate. Pilots sometimes continue to raise the nose and at some point they may lose sight of the runway. If this occurs, a go-around/rejected landing is the only safe option. Excess speed also keeps us afloat, which increases our exposure in gusty/crosswind conditions.

My definition of an aiming point is the point on the runway where the nose wheel would hit if you forgot to flare. I use the beginning of the 500-foot fixed distance marks (double set of three), also known as the beginning of the touchdown zone. The smaller the point, the more accurate the landing. If there's no 500-foot fixed distance markings, then I use the beginning of the second centerline stripe. Your selected aiming point is normally in-view as you transition to the landing attitude.

Runways with precision approaches usually have standard markings which include the threshold (beginning), touchdown zone markings (starts at 500 feet from the threshold), and an aiming point (starts 1,000 feet from the threshold).

As the aircraft crosses the fence, the pilot begins a "slow" power reduction such that the throttle reaches low/full idle just as the aircraft achieves the landing attitude just above the runway. It's a bit problematic from the standpoint of a numeric reference, especially when you consider you shouldn't be looking inside at this point anyway. Newer pilots occasionally "chop" the power (to idle) all at once. Not only does this reduce thrust, it also blocks airflow over the horizontal stabilizer/elevator which causes the nose to drop. Our new pilot pulls the nose back up, which causes a significant drop in airspeed and the subsequent, embarrassing impact. So much for stabilized. On the other hand, some hesitate to get the power back, and the additional thrust keeps the aircraft in ground effect for what seems like forever.



Runways with precision approaches usually have standard markings, which include the threshold (beginning), touchdown zone markings (starts at 500 feet from the threshold), and an aiming point (starts 1,000 feet from the threshold).

Getting it Right

Getting it right is tough and it's a little like basketball: Someone can show you how to shoot a basket, but you've got to practice to start making points.

Where did the FAA come up with 50 feet? A little research uncovered something so simple it was almost embarrassing. A standard vertical light system (VASI/PAPI) is designed to have the aircraft at approximately 50 feet when it crosses the threshold. Pull out a precision instrument approach plate and look at the threshold crossing height (TCH). Most are close to 50 feet with small variances due to installation restrictions. I guess that means there's no meaningful difference between a stabilized visual approach, a stabilized short-field approach and a precision instrument approach. If you're on the glide slope/path, the vertical light system should present an on-path indication and you'll also be on a 3-degree descent angle. A simple crosscheck: Dial up the precision approach if available and use vertical indication as a supplemental reference during visual approaches.

In the normal course of aviating, we get used to the tactile feel of the elevator, i.e., how much movement equates to how much pitch change. Pilots like to add a little speed because "it feels better." Otherwise, as the speed decreases, the more we must pull back on the elevator to achieve the desired pitch change. The "feels better" pilot usually has poor trim habits and often lands with the trim near the takeoff position.

A popular practice during the final seconds of the landing is to simultaneously trim the nose up as power is reduced. This keeps the elevator forces light/closer to normal. The downside can be the unexpected pitch up forces during a rejected landing. It's manageable as long as you are aware of the possibility. It's important to remember that "trim" sets the speed of the aircraft; that is, the aircraft will seek out the speed it's trimmed for if you release the controls.

Time to back up and clarify. The first figure shows the aiming point at the

numbers. Figure 2 shows it 1,000 feet down the runway. Well, which is it?

Depends on what you need to do.

If you're coming to Double Eagle II in Albuquerque, the precision approach runway is nearly 7,400 feet long. If you left the autopilot hooked up, the aircraft would crunch into the runway close to the 1,000 feet fixed distance markings, which is about the apex for the 3-degree descent. The large majority of twin and turbine use larger fields, and it's easy to get complacent and tolerate less than precise speed control. After all, it's only a few "extra" knots. Those who fly into challenging fields understand the importance of precise speed control and the value of angle-of-attack systems.

Landing at Elizabeth

I instructed at a Malibu/Mirage Safety Foundation seminar in Groton, Connecticut a few years back and my Piper Mirage client for the session REALLY wanted to land at Elizabeth (0B8). Useable runway is about 2,328 feet. We had a long talk and decided to go for it, but only after he demonstrated he could touchdown accurately and on-speed. We completed nearly a dozen practice landings at Groton before giving Elizabeth a try. The first attempt ended in a go-around because of runway-width illusions, but the second was on target, touching down in the first hundred feet of the pavement. When you consider the descent time from 50 feet to touchdown, it only took about 100-seconds of practice.

I'm sure you wouldn't want to "give away" the first 1,000 feet. In this case, your aim point would be before the runway, near the beginning of the displaced threshold.

I'm not suggesting readers go out and start calculating V_{ref} and press for the minimums. I offer this as a plausible reason for why you might be missing the mark or floating down the runway. Like basketball, you need to practice in order to improve.

Always consider this: Trim directly affects speed and speed controls the quality of the landing – first – last – always. Power controls the location!

(A big thanks to Dan Sharpes, CFI/CFII for his data crunching assistance.) T&T

Traffic pattern basics: Be at pattern altitude midfield, configure abeam the touchdown, begin the descent. At 45 degrees from the touchdown, turn base, configure and continue the descent. Plan the turn to final (~ 400 feet to 500 feet AGL) and stabilize the approach with the goal to cross the threshold at Vref about 50 feet AGL. The process allows for gradual reductions in altitude/speed. No power cuts or large pitch changes.

FIVE on the FLY

by **Rebecca Groom Jacobs**

WHO:
Matt Younkin

WHERE:
Siloam Springs, Arkansas

QUALIFICATIONS:
Air Show Performer

20-30 Shows / Year

Proficient in More Than 80 Types of Aircraft

5,000 Hours

1. What led to your career in aerobatics?

I'm a third-generation pilot and my dad was a renowned air show performer – flying in shows for more than 20 years. And though I've been flying since I was 14, I actually did not do much in aerobatics until my dad passed away in 2005. I began practicing skills I learned from him and with R/C airplanes and applying them in a Super Decathlon, performing in my first air show in November of that year. Once I graduated from the Super Decathlon, I added the Travel Air Mystery Ship to the lineup. I flew both for a couple of years before introducing the Beech 18 in 2007.

2. Can you describe how the Beech 18 handles during aerobatic maneuvers?

In a lot of regards, it flies like a heavy twin. But it's also a very honest airplane. Not necessarily super forgiving, but will let you know if you upset it any way and allow you time to fix it quickly. It was not designed for aerobatics so you have to be very careful when doing so. I preplan all maneuvers and everything I do is positive G – loops, rolls, Cuban eights, point rolls, etc. With the Twin Beech, there is a lot going on in the cockpit. You can actually look up videos on YouTube where you can watch what all I'm doing and keeping track of.

3. What air show performers/performances influence you the most?

That's a very long list… but my dad has certainly always been my hero. I think he was one of the greatest stick-and-rudder pilots there has ever been. And one of the biggest pieces of advice he had for anyone aspiring to be an aerobatic performer was "an air show act must be unique and original to be successful." I've tried to abide by that advice over the years. I'm proud to carry on his legacy act with the Beech 18, eventually pioneering my own twist with the night air show.

4. Can you describe how the night air show came about?

When I first started flying the Twin Beech, I noticed there were a lot of factory lights all over the airplane that no longer worked. Which got me thinking, if all the lights functioned, we would already be halfway to a night show. Inspired, we designed spotlights for the engines and tails to highlight the smoke, similar to the AeroShell Aerobatic Team. Then we pioneered something new: the use of lights inside the engine cowlings. Lastly, we planned the performance to a sequence that was short and sweet, but with a powerful soundtrack that only the Twin Beech could pull off.

5. How many years have you performed at EAA AirVenture? What makes it special?

This will be my 11th consecutive year. I took the Mystery Ship the first year, and the Beech 18 every year since. EAA AirVenture is the absolute mecca for aviation enthusiasts. It does not matter which facet of aviation you're interested in, there's going to be a plethora of whatever that is somewhere on the grounds. It was a vacation destination for my family growing up; my dad performed there many years. To be a part of the event now is truly an honor I cannot describe in words. T&T

Jacobs is a private pilot and general aviation enthusiast. In 2012 she earned her business degree in marketing from Oklahoma State University. Since then, she has specialized in aviation-specific marketing, working first for Piper Aircraft, and then as an aviation marketing specialist at Sullivan Higdon & Sink. Jacobs is now serving as the Director of Communications at the consulting firm Groom Aviation. You can contact Rebecca at rebecca@groomaviation.com

Air show performer Matt Younkin.

AIRCRAFT FINANCING
and more

We know aircraft financing and we know banking.

1st Source Bank has 30 years of experience as a leading national aircraft lender, and over 150 years as a full-service bank.

The aviation lenders at 1st Source – *experts in aircraft financing* – give you the right advice and the right financing to get you airborne quickly. Whether you are a first-time buyer, trading up or refinancing your current aircraft, give us a call. Strong, stable and personal, we'll keep your best interests in mind.

Contact us at 574 235-2037, 800 513-2360 or at marketing@1stSource.com.

1st Source Bank Member FDIC

1STSOURCE.COM/SFG

NBAA NAFA NARA MEMBER POPA TBMOPA TBMOPA Foundation CITATION EMBRAER

AirVenture 2017 Air Show Performance Schedule

AirVenture's daily air shows feature a wide variety of precision aerobatics, the latest innovations, rare and unique flying examples, and history coming alive. As of press time, the following acts had been confirmed for this year's AirVenture. This does not include all of the acts, and the daily schedule is subject to change any time. Check the AirVenture web site or program for updates.

	Monday	Tuesday	Wednesday	Wednesday Night (Fireworks)	Thursday	Friday	Saturday	Saturday Night (Fireworks)	Sunday
Blue Angels						X	X		X
Parachute Demo Team	X	X	X		X	X	X		X
Patty Wagstaff			X			X			X
Matt Chapman (Extra 330LX)	X		X						X
The Thric3		X	X			X			
Rob Holland (MX-2)	X						X		
Bill Stein (Edge 540)	X				X				
Aeroshell Aerobatic Team	X			X		X		X	
Greg Shelton & Ashley Key (450 Super Stearman/Wing Walking)	X			X				X	X
Kyle Franklin (Piper Cub)	X	X	X						X
Sean D. Tucker (Oracle Challenger III)		X			X		X		
Mike Goulian (Extra 330SC)					X		X		X
Matt Younkin (Beech 18)		X		X		X		X	
Paradigm Aerobatic Team	X	X		X	X	X		X	
Warbirds of America	X	X	X		X	X	X		X
USAF Heritage Flight		X	X		X	X	X	X	X
B-29s (Doc and FIFI)		X					X	X	

The Worldwide General Aviatio

owner/operators and chief pilots of these air

100% TOTAL MARKET COVERAGE

JETS

CHIEF PILOTS & OWNERS

Aircraft Count	
4	AIRBUS ACJ319
32	ASTRA 1125
31	ASTRA 1125SP
63	ASTRA 1125SPX
51	BEECHJET 400
275	BEECHJET 400A
58	BOEING BBJ
391	CHALLENGER 300
65	CHALLENGER 600
58	CHALLENGER 601-1A
133	CHALLENGER 601-3A
56	CHALLENGER 601-3R
279	CHALLENGER 604
5	CHALLENGER 800
169	CITATION 500
319	CITATION 525
284	CITATION BRAVO
151	CITATION CJ1
69	CITATION CJ1+
202	CITATION CJ2
160	CITATION CJ2+
390	CITATION CJ3
180	CITATION ENCORE
306	CITATION EXCEL
5	CITATION I
288	CITATION I/SP
478	CITATION II
50	CITATION II/SP
173	CITATION III
329	CITATION MUSTANG
138	CITATION S/II
257	CITATION SOVEREIGN
284	CITATION ULTRA
287	CITATION V
20	CITATION VI
104	CITATION VII
257	CITATION X
199	CITATION XLS
1	DIAMOND I
53	DIAMOND IA
3	DORNIER ENVOY 3
282	ECLIPSE EA500
47	EMBRAER LEGACY 600
8	EMBRAER LEGACY 650
158	EMBRAER PHENOM 100
82	EMBRAER PHENOM 300
123	FALCON 10
28	FALCON 100
25	FALCON 200
176	FALCON 2000
21	FALCON 2000EX
81	FALCON 20C
17	FALCON 20C-5
26	FALCON 20D
3	FALCON 20D-5
7	FALCON 20E
8	FALCON 20E-5
59	FALCON 20F
82	FALCON 20F-5
229	FALCON 50
8	FALCON 50-40
113	FALCON 50EX
135	FALCON 900
21	FALCON 900C
116	FALCON 900EX
98	GLOBAL 5000
112	GLOBAL EXPRESS
25	GULFSTREAM G-100
161	GULFSTREAM G-200
8	GULFSTREAM G-300
27	GULFSTREAM G-400
222	GULFSTREAM G-450
7	GULFSTREAM G-500
330	GULFSTREAM G-550
42	GULFSTREAM G-I
110	GULFSTREAM G-II
31	GULFSTREAM G-IIB
186	GULFSTREAM G-III
188	GULFSTREAM G-IV
317	GULFSTREAM G-IVSP
182	GULFSTREAM G-V
40	HAWKER 1000A
9	HAWKER 125-1A
2	HAWKER 125-1AS
1	HAWKER 125-3A/RA
2	HAWKER 125-400A
29	HAWKER 125-400AS
1	HAWKER 125-400B
4	HAWKER 125-600A
11	HAWKER 125-600AS
113	HAWKER 125-700A
50	HAWKER 4000
187	HAWKER 400XP
21	HAWKER 750
223	HAWKER 800A
2	HAWKER 800B
335	HAWKER 800XP
14	HAWKER 800XPI
67	HAWKER 850XP
131	HAWKER 900XP
4	JET COMMANDER 1121
6	JET COMMANDER 1121B
12	JETSTAR 731
11	JETSTAR II
51	JETSTREAM 31
40	JETSTREAM 32
15	JETSTREAM 41
15	LEARJET 23
26	LEARJET 24
5	LEARJET 24A
19	LEARJET 24B
53	LEARJET 24D
14	LEARJET 24E
9	LEARJET 24F
33	LEARJET 25
57	LEARJET 25B
7	LEARJET 25C
94	LEARJET 25D
6	LEARJET 28
28	LEARJET 31
172	LEARJET 31A
43	LEARJET 35
426	LEARJET 35A
21	LEARJET 36
34	LEARJET 36A
24	LEARJET 40
219	LEARJET 45
193	LEARJET 45XR
115	LEARJET 55
5	LEARJET 55B
12	LEARJET 55C
293	LEARJET 60
130	PREMIER I
16	SABRELINER 40
13	SABRELINER 40A
7	SABRELINER 40EL
3	SABRELINER 40R
24	SABRELINER 60
1	SABRELINER 60A
2	SABRELINER 60AELXM
12	SABRELINER 60ELXM
3	SABRELINER 60EX
1	SABRELINER 60SCEX
85	SABRELINER 65
1	SABRELINER 75
17	SABRELINER 80
3	SABRELINER 80SC
101	WESTWIND 1
4	WESTWIND 1123
45	WESTWIND 1124
76	WESTWIND 2

TURBO PROPS

CHIEF PILOTS & OWNERS

Aircraft Count	
275	CARAVAN 208
1087	CARAVAN 208B
3	CARAVAN II
34	CHEYENNE 400
221	CHEYENNE I
14	CHEYENNE IA
303	CHEYENNE II
59	CHEYENNE III
21	CHEYENNE IIIA
59	CHEYENNE IIXL
22	CHEYENNE IV
303	CONQUEST I

n & Business Aviation Markets

craft *ALL RECEIVE* Twin &Turbine every month

Do you want your marketing message to reach these key decision makers?

It will when you advertise in Twin & Turbine

354	CONQUEST II
49	KING AIR 100
502	KING AIR 200
12	KING AIR 200C
12	KING AIR 200T
203	KING AIR 300
3	KING AIR 300LW
588	KING AIR 350
34	KING AIR 350C
17	KING AIR 90
7	KING AIR A/B90
120	KING AIR A100
203	KING AIR A200
58	KING AIR A90
221	KING AIR A90-1
135	KING AIR B100
902	KING AIR B200
78	KING AIR B200C
63	KING AIR B200GT
2	KING AIR B200SE
3	KING AIR B200T
66	KING AIR B90
295	KING AIR C90
32	KING AIR C90-1
160	KING AIR C90A
316	KING AIR C90B
7	KING AIR C90SE
278	KING AIR E90
160	KING AIR F90
17	KING AIR F90-1
1	MERLIN 300
1	MERLIN IIA
29	MERLIN IIB
12	MERLIN III
20	MERLIN IIIA
49	MERLIN IIIB
14	MERLIN IIIC
5	MERLIN IV
13	MERLIN IV-A
13	MERLIN IV-C
105	MITSUBISHI MARQUISE
1	MITSUBISHI MU-2D
29	MITSUBISHI MU-2F
1	MITSUBISHI MU-2G
22	MITSUBISHI MU-2J
32	MITSUBISHI MU-2K
15	MITSUBISHI MU-2L
23	MITSUBISHI MU-2M
30	MITSUBISHI MU-2N
38	MITSUBISHI MU-2P
55	MITSUBISHI SOLITAIRE
673	PILATUS P-12
341	PILATUS PC-12 NG
549	PILATUS PC-12/45
154	PILATUS PC-12/47
18	PIPER 700P AEROSTAR
492	PIPER MERIDIAN
10	ROCKWELL 680T TURBO
6	ROCKWELL 680V TURBO II
7	ROCKWELL 680W TURBO II
9	ROCKWELL 681 HAWK
89	SOCATA TBM-700A
91	SOCATA TBM-700B
4	SOCATA TBM-700C1
115	SOCATA TBM-700C2
318	SOCATA TBM-850
22	SOCATA TBM-900
6	STARSHIP 2000A
51	TURBO COMMANDER 1000
27	TURBO COMMANDER 690
129	TURBO COMMANDER 690A
113	TURBO COMMANDER 690B
58	TURBO COMMANDER 840
16	TURBO COMMANDER 900
23	TURBO COMMANDER 980

TWIN PISTON

OWNERS

Aircraft Count

9	ADAM A500
1550	BARON 58
479	BARON 58P
137	BARON 58TC
5	BARON A56TC
142	BARON G58
43	BEECH BARON 56 TC
2	BEECH BARON 58 PA
217	BEECH DUKE B60
193	CESSNA 340
556	CESSNA 340A
120	CESSNA 402B BUSINESS LINER
64	CESSNA 402C
38	CESSNA 404 TITAN
288	CESSNA 414
374	CESSNA 414A CHANCELLOR
72	CESSNA 421
61	CESSNA 421A
454	CESSNA 421B
757	CESSNA 421C
66	CESSNA T303
124	PIPER 601P AEROSTAR
29	PIPER 602P AEROSTAR
465	PIPER CHIEFTAIN
28	PIPER MOJAVE
870	PIPER NAVAJO
24	ROCKWELL 500 SHRIKE
33	ROCKWELL 500A SHRIKE
69	ROCKWELL 500B SHRIKE
46	ROCKWELL 500S SHRIKE
8	ROCKWELL 500U SHRIKE
28	ROCKWELL 520 COMMANDER
15	ROCKWELL 560 COMMANDER
21	ROCKWELL 560A COMMANDER
17	ROCKWELL 560E COMMANDER
11	ROCKWELL 560F COMMANDER
36	ROCKWELL 680 SUPER
17	ROCKWELL 680E
19	ROCKWELL 680F COMMANDER
22	ROCKWELL 680FL GRAND COMMANDER
14	ROCKWELL 680FLP GRAND LINER

HIGH PERFORMANCE MOVE-UP SINGLES

OWNERS

Aircraft Count

250	BEECH BONANZA
493	CESSNA 182
71	CESSNA 206
448	CESSNA P210N
26	CESSNA P210R
58	CESSNA T182
1	CESSNA T206
2714	CIRRUS SR22
240	PIPER MALIBU
387	PIPER MALIBU MIRAGE

37,744 TOTAL AIRCRAFT

TWIN&TURBINE

John Shoemaker, Advertising Director
2779 Aero Park Drive • P.O. Box 968 • Traverse City, MI 49685-0968
(800) 773-7798 • (231) 946-3712 • Fax: (231) 946-9588
E-mail: john.shoemaker@VPDemandCreation.com • www.twinandturbine.com

Look Up, Look Down ...

A basic guide to the most valuable navigation device you probably rarely use.

by **Joe Ratterman**

If you are experienced using your airplane's on-board radar, and you turn it on during most of your flights, then congratulations! You are a rare breed!

However, if you are like most pilots, you probably don't use your radar often and feel much more comfortable using NEXRAD when it comes to navigating through the springtime thunderstorm season each year.

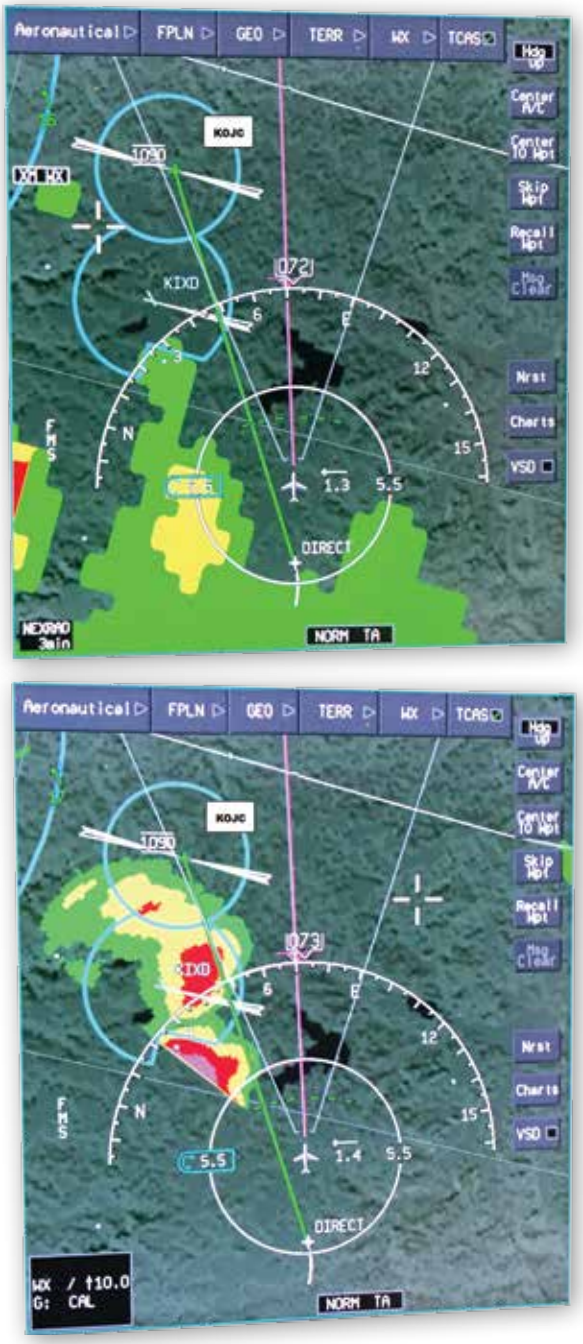
My goal in writing this article on basic radar usage is to get your attention, arm you with enough information to *start* effectively using your radar, and encourage you to keep learning how to use your radar. It's possibly one of the most valuable tools in your aviation arsenal, and my hope is that you come to trust and rely on it as much as I do.

Look Out!

NEXRAD versus Radar

The first question we need to ask is, why do we need on-board radar at all if we have a NEXRAD weather product available in the cockpit? Sure, NEXRAD is easy to read and packaged up nicely so anyone can interpret where the weather dangers are, right? Well yes, and mostly NO! Yes, it's easy to read, but it doesn't tell you where the storms are, it only tells you where they used to be. You need to understand that, based on the way these images are created on the ground beforehand, the data on your screen is actually older than what it says, by as much as 15 to 20 minutes!

Have a look at these two images I took this spring, one of my NEXRAD (top), and the other of my radar (bottom), both taken within a few seconds of each other as I was planning to land at KOJC.



Quite a different perspective, wouldn't you say? If I had decided to fly a heading directly toward KOJC (my airport destination), the NEXRAD image indicated, "Come on over, the coast is clear." But the radar image was screaming, "Steer clear, a thunderstorm just popped up in front of you!" Because I was using the radar, I flew around the dangerous weather and approach my airport from the south. As you can see, a lot can happen in 15 to 20 minutes, and the real-time nature of your on-board radar is vital to making tactical navigation decisions when the weather is changing around you.

Why Don't We Use Our Radars?

So if NEXRAD is delayed, and radar is truly real-time, why don't more pilots use their radar? Maybe because NEXRAD is easy to read and our radar systems are simply mysterious to us. The manual for your radar reads like college physics and geometry textbooks, and you get all kinds of different results as you turn the different dials.

Why so many controls: STBY, BRG, TILT, GAIN, GND, Stabilizer, Vertical Profile, and others? It seems like an engineering degree is required to use these things!

A lot of papers and instructional manuals have been written on how to "operate" radar systems, but not enough information is available on how to "use" the radar. It is easy to turn on NEXRAD and watch the screen fill up with safe greens, cautious yellows, and dangerous reds and purples.

The primary reason that NEXRAD is so easy to read, even if it is dangerously delayed, is that the images are created using a ground-based radar network. The NEXRAD Doppler radar beams are sent from the ground up into the sky, so there is no chance for confusing "ground returns" to show up in the final images. Your on-board radar system, however, generally must deal with ground returns because, most of the time, at least part of your radar beam is hitting the earth as you operate it *from the sky*.

If on-board radar systems could somehow ignore ground returns, and only return weather related depictions in our path, then your radar display would look much more like a NEXRAD display, and it would be in real-time. Wouldn't that be awesome?

Using your radar will never be as easy as using NEXRAD. But with knowledge and a little practice, you can learn to be an ace pilot when it comes to your on-board radar.

The 7,000-foot Convective Hotspot

The key to using your radar is simply knowing "what" to look for and "where" to look for it. Your radar beam is like a flashlight beam, spreading out from the front of your airplane in a cone shape, sweeping left and right. What you are looking for are storms that are brewing. Where you need to look is where storms begin and end, and more precisely, you need to know where in the *vertical dimension* to look.

Convective storms, regardless of what stage they are in, will nearly always show up between 18,000 feet and 25,000 feet. This is where a thunderstorm's wind and water are either going up or down, and where the moisture (i.e. large rain drops) is the most reflective from your radar beam's energy.

Go Ahead. Stand on the Brakes.

Now EASA Certified

Effective, Affordable Anti-Skid Braking for Your Aircraft

Advent eABS™

BREAKTHROUGH GPS / DIGITAL ANTI-SKID

CERTIFIED | LIGHTWEIGHT | EASY TO INSTALL

Eclipse 500/550 | King Air B200/B300 | Pilatus PC-12/12NG

Advent Aircraft Systems, Inc

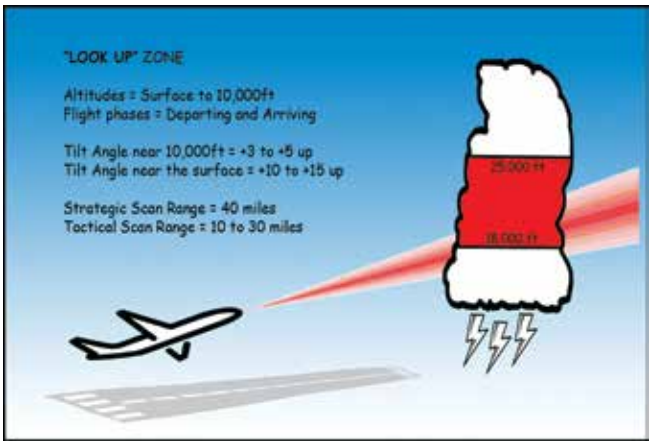
CONTACT TOM.GRUNBECK@AIRCRAFTSYSTEMS.AERO | 918.388.5940 | AIRCRAFTSYSTEMS.AERO/DEALERS.PHP

If your radar beam can be confidently pointed at the vertical slice of sky in front of you that captures this 7,000-foot hotspot, then you are going to see all you need to see. It really is that easy. If we are flying anywhere below 18,000 feet, then we need to be looking UP for the convective area above us. If we are flying at or above that level, we need to be looking OUT or DOWN at that same 7,000-foot window. Point your radar beam at this hotspot for convective storms, and you'll see what you need to see on your radar screen.

Three Zones, Same Plan

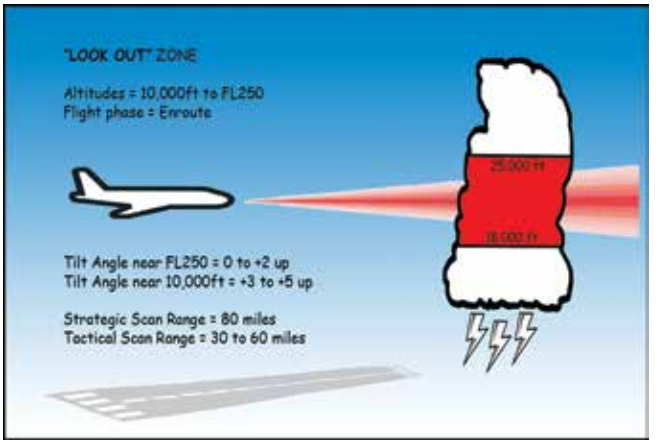
I like to think about three unique "radar usage zones:" The LOOK UP zone, the LOOK OUT zone, and the LOOK DOWN zone. Let's briefly cover each of these in turn. As we do, you can feel free to ignore most of your radar controls except for TILT. The TILT knob should be the only control you need to worry about until you have more experience and confidence in using your radar.

In the LOOK UP zone, we might be taxiing, departing for our destination, or arriving at the end of our trip. In all cases, we are within a few thousand feet of the ground, and any convective weather dangers are above us. You need to TILT your radar beam up to see the dangers above, the dangers that are waiting to come crashing down on your head. Right after takeoff, start by TILTING your radar as high as it will go, typically +15 degrees, and then slowly adjust the TILT to between +3 or +5 degrees as you approach 10,000 feet.This should give you a good idea of the stuff above you, looking out for the next 10 to 40 miles. Any returns that show up as red or magenta should be avoided at all cost. From this low-altitude vantage point, your radar returns will look a lot like your NEXRAD display because you won't have any ground returns on the display. Stuff you see on the screen that looks like a storm IS A STORM and should be given the respect it deserves Avoid it by a healthy margin. Don't try to look out any further than 40 miles in front of you in this zone, and plan to make tactical heading changes to circumnavigate storm cells in the 10 to 30 miles immediately in front of you.



Once you have climbed up above 10,000 feet, you are now in the LOOK OUT zone and in the same altitude range as the core of any thunderstorms in front of you. In this zone, you will now have to start dealing with "ground returns," which can obscure any weather depictions in the same area over the ground. This is where science leads to art, and where you need to learn to TILT your radar until you can distinguish between the ground and dangerous weather.

Generally, you will want to see a clear line of ground returns about halfway up your radar screen. Therefore, TILT your radar until the front (or bottom) half of your display is mostly black, and there is a ring of mostly green starting after that. Storm cells will still be yellow, red, and magenta farther past the black area, and will appear to blend in with the ground returns at times, but they will also continue to "march toward" your position and into the black zone if they are above the ground. As a rough guideline, your TILT angle will be around +3 to +5 degrees up near the 10,000 feet lower end of this zone. As you climb higher toward FL250, your TILT angle will be between 0 and +2 degrees up. Keep your radar range on 80 miles in this zone until you need to make tactical heading changes, and then focus on the next 30 to 60 miles in front of you for maneuvering.



PREMIERE AVIATION

Aerodynamic Refinement Simplified

CESSNA 400 SERIES SPEED COVERS

Patented Speed Covers for ALL Hydraulic Gear Twin Cessnas

Winglet Performance at a Fraction of the Cost

Increased Safety - Increased Climb - Increased Speed - Increased Payload

PREMIERE AVIATION is a Leader in *Aircraft Sales and Acquisitions*

Specializing in Turbofan, Turboprop and Cabin Class Twins

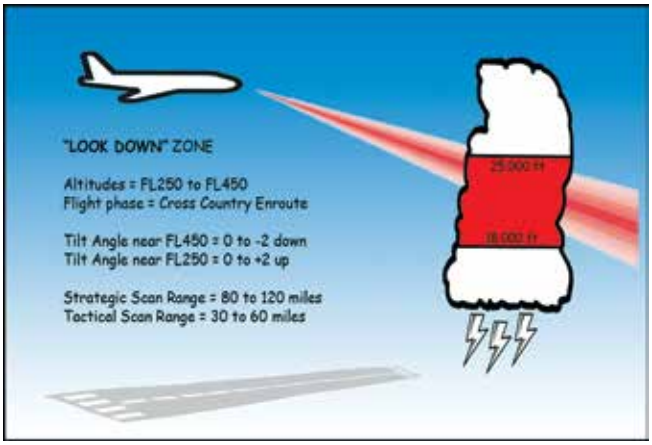
35 Years of Flying and Maintenance Experience with All Types of Aircraft Gets You Top Dollar Selling and Best Value Buying

"Premiere Aviation thoroughly inspected my plane, made suggestions and necessary repairs, and got me top dollar." - Ken A., Santa Barbara CA

"Premiere Aviation saved me over $50,000 by selecting a plane to fit all my needs and disclosed everything there was to know about the plane!"
- Jonathan B., Berkeley CA

Call Premiere Aviation at (925) 788-9010
***or visit* www.Premiere-Aviation.net**

The LOOK DOWN zone is similar to the LOOK OUT zone, but as you climb higher, your TILT angle will begin to have a more pronounced downward pitch, as much as -2 degrees down. In this zone, you can also look a little further out for exceptionally tall storms, often as far as 120 miles or more. As you continue to TILT your radar down, ground returns become even more pronounced, but you can adjust your TILT up and down until you can clearly see any weather dangers as distinct from ground returns. In this zone, cities will start to reflect back and look like big storms on your radar, but they won't "march towards you" into the black half of your screen, they will disappear long before that. Cities will also look more like wide rectangular returns and not so much like the typical oval returns of large thunderstorms. I can assure you that eventually you will become proficient at distinguishing between earth-based objects and actual storms.



Final Thoughts

Convective activity can be extremely dangerous to your safety in flight, so you need to be able to identify storms and avoid them. NEXRAD is a great tool that gives you a big picture view of area weather systems, but it should never be used to tactically maneuver around storm cells. That's where you radar system really shines.

While you are flying in and around weather, switch back and forth between your NEXRAD display and your radar display. Adjust your TILT up or down until your radar display maps visually to what your NEXRAD display is indicating. Once you have "mapped" these two views of the weather in front of you, rely mainly on your radar display for all short-range tactical heading changes. Use ATC as a third source of information to make sure what you see on your radar is an accurate depiction of the dangers in front of you.

Always avoid any red and magenta radar returns that look like storms, especially if you are in IMC conditions. Unless you can see a clear outline of a storm through the windshield, and know with absolute confidence that you can fly over it by at least 10,000 feet, trust your radar screen and fly around the red and magenta returns by at least 20 miles.

Practice on clear days finding and identifying your ground returns. Practice "painting storms" when you fly by them, even if they aren't in your path. Practice over water, finding islands and shorelines. Practice, practice, and then practice some more.

It should be noted that the TILT angle guidelines contained in this article are just that, guidelines. You should practice until you find the TILT positions that work best for your installation. Your dish size, radome condition, avionics and radar manufacturers, and specific airframe installation can all affect the radar returns you see at different TILT angles in your airplane. The general strategy, however, of looking UP, OUT, and DOWN for weather in the CONVECTIVE HOTSPOT vertical region will hold true in all cases.

If you made it this far in the article, then I hope you are excited to take your newfound knowledge with you on your next flight. We have only scratched the surface and there is so much more to learn. We didn't cover dish size (10-inch, 12-inch, or 24-inch) and the corresponding beam-angle size (10 degrees, 8 degrees, 4 degrees, etc.), and we didn't talk about GAIN, GRND MAP mode, Vertical Profile Mode, and the BRG selector. The learning has only just started, but you should now be armed with enough information to begin using your radar effectively.

I would like to give a shout-out to two individuals in particular, Archie Trammell and Erik Eliel, that have contributed a lot of information on radar usage to the pilot community, and I hope that you will follow up after reading this article by connecting with them and learning what they have to offer.

Archie and Erik are the "go-to" experts for airborne radar usage, and you can find their references and links at the end of this article. We didn't have enough time with this article to teach you the many important details that you can learn from them. If you understand the basic principles presented in this article, however, then take the next step and get Archie's advanced radar course and look for an opportunity to attend one of Erik's interactive radar seminars. Just like when you first got your private pilot license, you aren't really done now; the learning has just begun!

Additional resources for in-depth radar use:

Erik Eliel's website:
www.rtiradar.com/index.htm

Archie Trammell's websiteactual:
www.radar4pilots.com

To reach Archie:
mary@radar4pilots.com T&T

Joe Ratterman is an ATP pilot, type-rated in the Cessna Citation Mustang C510, with 2,500-plus hours in his logbook. Joe retired from a successful corporate executive career in 2015 and now flies as a professional charter pilot for Kansas City Aviation Company (KCAC) based in Overland Park, Kansas. He is also the current board chairman/president for Angel Flight Central.

by Jerry H. Trachtman

A Loaf of Bread, a Jug of Wine, and the FAA

It's your birthday, and to celebrate you meet some friends for dinner at your favorite restaurant. You enjoy a great steak, some wine, and after an enjoyable evening you get in your car for the short drive home. Halfway home you see flashing police lights in your rearview mirror, and you pull over. The officer tells you that your left taillight is out, and you thank him. It's late, your eyes are slightly bloodshot, the officer says he smells alcohol on your breath, and he arrests you for DUI. He tells you to step out of your car and submit to a blood alcohol breath test.

Somewhere in the back of your mind you remember that somebody once told you to never submit to a breath test if you had a drink before being stopped. You politely tell the officer no, and he warns you that your driver's license will be suspended if you refuse (each state has its own "implied consent" law, and in some states you may go to jail for refusing). You stand your ground, and the end result is your license is suspended and you need to hire a lawyer to defend your DUI arrest. Your lawyer is successful in having the DUI charge dropped, but the temporary driver's license suspension for refusing a breath test stands.

Will the FAA care about this? The short answer is, yes. (This article will not address the reporting requirement of FAR 61.15(e)).

Six months later you need to renew your FAA medical certificate (it doesn't matter what class), and you go online to complete the MedXPress renewal application. How do you answer Question 18.v, which asks if you have a "History of (1) any conviction(s) involving driving while intoxicated by, while impaired by, or while under the influence of alcohol or a drug; or (2) history of any conviction(s) or administrative action(s) involving an offense(s) which resulted in the denial, suspension, cancellation, or revocation of driving privileges or which resulted in attendance at an educational or a rehabilitation program."

Because you now have a history of an administrative action involving an offense that resulted in the suspension of your driving privileges, you must answer YES and you must provide a detailed explanation to include date, state involved, and that your license was suspended because you refused to be tested for blood alcohol content.

You see your AME for your medical examination, and guess what. Solely because you refused a breath test, he or she cannot issue your medical certificate. Instead, your AME is required to defer your medical certification to the FAA in Oklahoma City and you must provide the FAA:

A detailed personal statement regarding your past and present patterns of alcohol use;

A complete copy of your current driving record in any state that you have held a driver's license in the last 10 years;

Copies of any court records and arrest reports related to the event.

But wait, there's more. You must obtain and furnish the FAA a substance abuse evaluation from an addictionologist or addiction psychologist or psychiatrist familiar with the FAA's standards for such evaluations.

After you give the FAA all required documentation, then what? You must wait for a decision while the FAA determines whether or not it believes you have an alcohol abuse problem that requires treatment. And remember, you do not have a medical certificate while you are waiting for a decision. If the FAA decides you are not an alcohol abuser then, and only then, you will receive your medical certificate.

Would you be better off if you had submitted to a breath test? If you submit to a breath test and register a blood alcohol level lower than 0.15 but above your state's minimum allowable level, and if you are convicted of DUI and/or your driver's license is suspended, you must answer YES to question 18.v, but your AME may issue your medical certificate without deferring to Oklahoma City as long as it is your first alcohol related offense. You must provide your AME:

A detailed history of your alcohol use;

Copies of all court records and arrest reports related to the event.

Your AME can issue your medical certificate if based on the exam, a detailed interview, and review of the court records and arrest reports he or she determines your history does not indicate a possible alcohol abuse problem.

If you submit to a breath test and register a blood alcohol level of 0.15 or higher, your AME must defer to Oklahoma City and the requirements are the same as refusing a breath test.

I hope you enjoy your next birthday dinner, but perhaps this time without the wine. T&T

Jerry H. Trachtman is a board-certified aviation attorney who has been practicing law since 1976. He is a Piper Meridian owner-pilot and regularly speaks on aviation legal topics at aviation events.

by **Kevin R. Dingman**

Directions

Staying in the books to stay current

Some of us don't like to read directions. Even for challenging tasks like assembling furniture, a suite of home electronics or the boring sections of an airplane manual. The "us" being mostly us guys. We like to think that we are MacGyver; able to use innovation, ingenuity and our ability to solve complex problems using only the resources at hand, particularly during a crisis. After all, from a pilot's perspective, doesn't the need for directions show that we are deficient in logic or intuition, and that we can't think for ourselves? Perhaps it even indicates that we lack the ability to make critical decisions without assistance.

Honestly. Who has the patience to locate the section of an instruction manual that is printed in English, struggle through a poor translation, interpret the funky grammar and then flip through nine pages of cautions and warnings to finally locate the actual directions? Don't put your hand in this garbage disposal once installed; wires may cause electrical shock and don't drink the enclosed battery acid. Then it's: A into C into D, using hardware F, J and M.

If we handed one of today's poorly written instruction manuals to MacGyver, he'd put it where rays from the sun are absent, insert a model-rocket ignition wire in our nose, hold it in place with a wad of guncotton (nitrocellulose), secure it with duct tape and magnesium shavings from his fire-starter stick, then trigger it remotely with a Morse code text: Dah-dit… Dah-dah-dah… Dit-dah-dah (N-O-W).

Pilot-eze

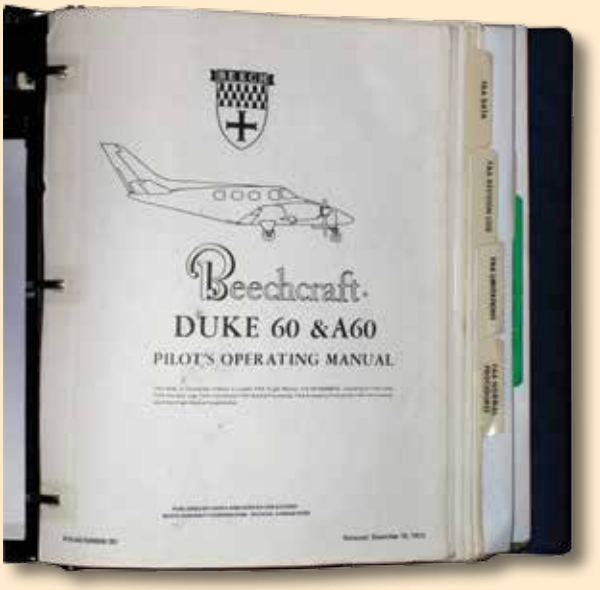
I just put a new roof on the chicken coop. My daughter was impressed that I had read the directions on a bundle of shingles. If we read the directions, the ladies are shocked. Skip them and we're stubborn and boyish. Please, somebody just shoot me.

The instructions recommended an underlayment and the minimum length of a shingle when you shorten one. Also, how much to overlap them, how many, the spacing, and the tolerance for the placement of roofing nails. It reminded me of riveting a metal patch on an airplane. Maybe it's the aviator in me that necessitates at least a cursory glance at all instructions.

Pilots make hundreds, even thousands of decisions each hour. Most of them are simple and relatively inconsequential. Unless compounded together, like MacGyver's nitrated cellulose. But some of our decisions are stand-alone critical. Constantly studying the rules, regulations, policies and procedures can be boring and painful. But aircraft manuals present a different flavor of instructions. Perhaps because they're edited by pilots, there are very few missteps in the translation and transfer of meaning and understanding. It's all written in pilot-eze; our favorite dialect.

We have learned that approach charts, the AIM, FAR's and manuals for our airplanes mean exactly what they say. A limitation is a limitation, a rule is a rule and a procedure is a

Aviation related instructions, procedures and regulations are clearly defined; not optional assembly techniques with missing punctuation, bad grammar and leftover pieces-parts.



The POH of the Beechcraft Duke, the personal aircraft of author Kevin Dingman, is written in easy-to-understand pilot-eze, unlike the instruction manuals for furniture assembly.

procedure. It's difficult to misinterpret a V_{mc} of 90 kts, a 60-psi tire pressure, a DH of 200 feet or the expiration date of an inspection or flight physical to be anything but what they really are. Aviation related instructions, procedures and regulations are clearly defined; not optional assembly techniques with missing punctuation, bad grammar and leftover pieces-parts.

In aviation, we have well-structured ground instruction, realistic simulators and training in all types of airplanes. If something remains unresolved after performing a procedure, it's because we likely messed up or are in uncharted territory. With enough study, when something that they say could never happen, actually happens, when we stumble into uncharted territory, we can unleash our MacGyver and use intuition, logic and experience to solve extremely complex and changing scenarios. A deficit in knowledge is inefficient and can be precarious. A recent faux pas on my part serves as an example of where logic and intuition were not enough to compensate for low experience in the aircraft, along with having forgotten a "relatively inconsequential" part of the instruction manual.

PACK light

We pushed back from the gate and started the right engine of our 737. After setting the parking brake, we started the left. One of the steps in the after-start checklist is to push the Recall light panel. Once released, if it senses an issue, the Master Caution and the associated light in the offending system will illuminate. The Master Caution and the left PACK (Pneumatic Air Cycle Kit, which is responsible for pressurization and air conditioning) lights were illuminated. But the PACK light would extinguish when we pushed the Master Caution reset.

And this is where my inexperience in the 737 bit me in that minimal sunshine area. Referencing the QRH (Quick Reference Handbook) for a PACK light, you find a note that says: "If the PACK light extinguishes when the Master Caution light is depressed, the primary or backup controller has failed and this QRH procedure does not apply." It doesn't say, which procedure does apply, however. And it also doesn't say which controller it's talking about: the pressurization controller or the temperature controller.

Also, the procedure is intended for use inflight because it has no "if-then" decision tree for applying the procedure on the ground, and it's the only procedures listed under PACK in the QRH. Well then, what procedure does apply? The QRH doesn't say, so next we went to the PACK section of the MEL (minimum equipment list) for clues.

"We have learned that approach charts, the AIM, FAR's and manuals for our airplanes mean exactly what they say. A limitation is a limitation, a rule is a rule and a procedure is a procedure."

A Nuisance

There are 16 PACK system items filling the same number of pages in the MEL. Of course, they start out with the actual PACK as the offending component. But the list of 16 items also includes outflow valves, trip warning systems, shut-off valves, ram air systems, rate of climb indicators, temperature controllers, pressurization controllers and on, and on, and on. Get the picture? However, about eight pages into the PACK section of the MEL, buried in a note under the Flight Deck Temperature Control Systems heading, there is a note that says: "After engine start, a nuisance PACK light may illuminate during a Recall check. If the light extinguishes during the Master Caution reset, refer to the Operating Manual. Dispatch is permitted if the light can be reset."

Hum. A "nuisance" light? I'll need to look up nuisance in the AIM. In this Captain's defense, my experienced FO and the

COMBAT WOUNDED
THEY'VE GOT HEART, THEY NEED WINGS

Imagine returning home from combat facing devastating injuries
and long-term hospitalization-- in a facility hundreds of miles away from your family.

Imagine somebody brings you together.

The VAC provides free air transportation to wounded veterans and their families for medical
and other compassionate purposes through a national network of volunteer aircraft owners and pilots.

FIND OUT HOW YOU CAN MAKE A DIFFERENCE.

VeteransAirlift.org

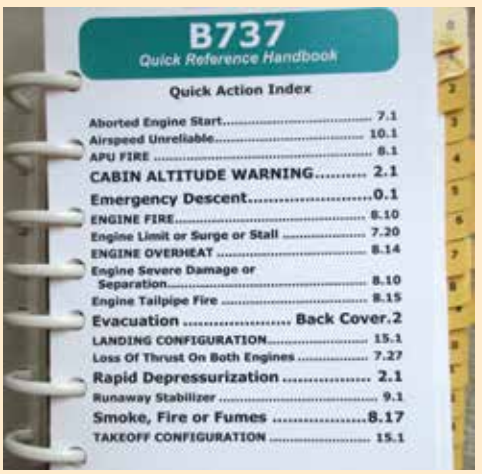
952-582-2911

maintenance technician called to fix our PACK after we returned to the gate were also unable to chase this rabbit to the proper QRH and MEL resolution. The instructions didn't intuitively lead you along a path to the answer. I hadn't remembered the relevant part of the instruction manual from initial training and my precarious faux pas cost the passengers an hour delay. Now, that's a nuisance.

Locusts & Linguistics

I've often written allegorically; tacitly struggling to sneak the epiphany into your repertoire that eventually, everything that can go wrong in your vehicle, will go wrong. Those responsible for promoting GA (thank you for that, by the way) hope that we writers use judgement and restraint when highlighting the risks in GA so as to avoid a biblical level of alarm: locusts, frogs, boils, etc. But those that fly the airplanes ask us to tell them the sometimes-terrifying stories that we and others have encountered so as to avoid a similar mistake themselves. No one wants locusts, frogs and boils.

Like everything, it's a balance. The crew, the payload, the environment, the machine and the airspace system are the variables in our flying equation that we must properly balance. We will make mistakes. Machinery will act up, malfunction and break. The weather will deteriorate. When things happen, the equation must be rebalanced and solved again, sometimes, several times in the same flight. We can learn how to balance risk and the variables by reading the instructions.



The Boeing 737 Quick Reference Handbook. Not all instructions intuitively lead you along a path to the answer.

No Fudging

Our balancing skills, once attained, are not indelible; they fade with time and lack of use. Most of us need constant study, review and the use of those skills to maintain proficiency. Some areas have room for us to fudge, some do not. Some are inconsequential and some are critical. We've learned that you don't compromise with fuel, weight and balance, fitness to fly and the mechanical condition of our machines, for example. Reading the manuals, following their recommendations and using sound judgement is how we become knowledgeable, proficient and learn where not to fudge.

There are gotchas-a-plenty waiting to compound themselves on top of any self-inflicted faux pas like a nuisance warning light. Occasional review of the manuals will help us better understand our systems and to keep our hand out of a garbage disposal. Last month, in our Jet Journal section, I described how we can use litanies to assist with a go-around by reviewing phase-of-flight specific procedures in advance. This month, let's add a review of the operating manual, if only a few pages at a time. It will be fun and mostly painless. It's written in pilot-eze after all. That's what MacGyver would do. T&T

Authors note:

It's time for EAA AirVenture Oshkosh. At the convention (KOSH July 24-30) you will find pilots, engineers, designers, artists and visionaries from many different genres. I encourage you to attend and be inspired by their MacGyver-like ideas, abilities and and accomplishments.

Kevin Dingman has been flying for more than 40 years. He's an ATP typed in the B737 and DC9 with 23,000 hours in his logbook. A retired Air Force major, he flew the F-16 and later performed as an USAF Civil Air Patrol Liaison Officer. He flies volunteer missions for the Christian organization Wings of Mercy, is employed by a major airline, and owns and operates a Beechcraft Duke. Contact Kevin at dinger10d@gmail.com.

Safer Flying for Single Pilots: Exploring New Methods to Address Training Concerns

by Ed Bolen NBAA President and CEO

An expanded version of following article appeared as a Digital Exclusive in the May/June 2017 issue of NBAA's Member publication, Business Aviation Insider. To read the complete article and more, download the BAI app at *www.nbaa.org/news/insider/.*

Business aviation accidents are rare, but everyone agrees that one accident is too many. Accidents involving business aircraft flown by a single pilot remain among the industry's concerns over safety, despite numerous advances in flight training practices, and ever-increasing technology on the flight deck to assist pilots in critical situations.

That's why the NBAA Safety Committee recently identified the rate of single-pilot accidents as a Top Safety Focus Area for 2017.

Accident rates are consistently, demonstrably higher for single pilot-operated aircraft, and this may be attributed to several distinct challenges facing owner-pilot operators. In addition to often having sole responsibility for the overall enterprise supported by that aircraft (increasing the potential for distractions and stress), single pilots are also more susceptible to task saturation, leading to operational errors.

One example of the potential consequences came in the December 2014 loss of a light business jet in Gaithersburg, MD, which the National Transportation Safety Board attributed to the single pilot's failure to engage the aircraft's deicing systems while approaching to land at Montgomery County Airpark (GAI). Six persons died in that accident, including three on the ground.

While multiple factors may affect the performance of any flight crew, including single pilots, most discussions about improving performance begin with the subject of training, particularly recurrent training.

Tom Norton - president of Norton Aviation, a provider of in-aircraft training for light jet aircraft - noted many pilots approach recurrent training intending to "check off" the mandated requirements as quickly and as inexpensively as possible.

"The most efficient method to accomplish this is to strictly adhere to the guidelines required by the FAA practical test," he continued. "However, that approach doesn't currently address factors that are particularly important for single-pilot operators, such as proper aeronautical decision making and risk management."

While those subjects are covered in the FAA's new airman certification standards for private pilot and instrument training, which are expected to ultimately spread to other certifications, for the moment Norton must look for opportunities to work those discussions into the training process.

"I often ask pilots coming to me for training, 'what have you done in the past year that's scared you?'" he added. "That helps identify training priorities that may not otherwise be addressed."

Another approach involves adopting safety practices from larger operations. "Most single pilots simply don't have the supporting infrastructure available with two-person crews to foster a safety culture," said Bob Wright, president of Wright Aviation Solutions. 'They have their

day job, for which they need to fly their plane, and there isn't a lot of time left for anything that doesn't seem to aid those objectives."

To combat these tendencies, Wright pointed to work done by the NBAA Safety Committee's Single-Pilot Safety Working Group, including last November's introduction of a Risk Management Guide for Single-Pilot Light Business Aircraft, which includes a Flight Risk Assessment Tool to aid operators in assessing potential risk factors prior to each flight.

"Going forward, the working group aims to introduce more tools and incentives in these areas," he added. "If you aren't trained to assess risk, you don't know what you don't know. The good news is that risk management is no longer an outlier issue, and it's likely pilots will soon be tested on risk assessment proficiency.

"We need to make [the issue of single-pilot safety] personal," Wright added. "We must accept, and then demonstrate, understanding of the responsibility we take on every time we prepare to fly. Even when we're alone in the cockpit, pilots must consider how many people are affected by our decisions...especially when something goes wrong."

Industry stakeholders have also engaged with their peers on possible solutions to address these concerns. The Citation Jet Pilots Owner/Pilots Association recently formed a dedicated Safety Subcommittee, led by four-time NASA astronaut Charlie Precourt, aimed at elevating these discussions within the Citation operator community.

Despite his more than 11,000 hours of experience piloting dozens of aircraft, Precourt admitted to being unfamiliar with the nuances of the aircraft's advanced avionics system during his recent experience earning his single-pilot certification in the CJ3 through a respected Part 142 simulator training provider. "I earned the rating, and I met the necessary standards for operating the aircraft and its systems," he explained. "That said, 'proficient' is a long way from 'good.'"

Precourt also suggested development of crew resource management (CRM) skills specifically for single pilots. "That doesn't just mean knowing how to use cockpit automation," he continued. "Single pilots should consider the variety of downline resources they have available in making safe and educated decisions, including the weather briefer, an FBO employee, and other pilots.

"Collectively, we have a huge opportunity to redefine what single-pilot CRM looks like, and how we can train for it," Precourt concluded. T&T

Four GA Airports Recognized for Exemplary Winter Storm Responses

Snow and ice have major impacts on airport operations, requiring skill, preparation and perseverance to keep airfields open and operating safely. Four U.S. airports with a significant business aviation presence were recently honored with the 2017 Balchen/Post Awards for their handling of winter-related challenges.

- Laurence G. Hanscom Field Airport (BED) in Bedford, MA won top honors in the Large General Aviation (GA) Airports category for airports with more than 50,000 operations per year.
- New Jersey's Teterboro Airport (TEB) received honorable mention in the Large (GA) Airport category.
- Griffiss International Airport (RME) in Rome, NY received the top award for smaller GA fields.
- Indiana's Columbus Municipal Airport (BAK) earned an honorable mention in the smaller GA airports category.

Effectively managing snow and ice removal is a challenge for many airports, particularly those with smaller operating budgets. "It all comes down to having a good equipment fleet and an excellent group of employees," said Dean Millington, airport maintenance superintendent for Oneida County, NY, which operates Griffiss. "Our staff works extremely hard."

That team was tested in March when a storm dropped 33.5 inches of snow on RME over a 24-hour period. "We had zero visibility, posing a significant safety risk to our team on the field," said aviation commissioner Russell Stark. "Our pre-storm planning included notifying flight crews well in advance that closure was a possibility, and our crews worked around the clock as soon as the visibility cleared."

Winter 2017 posed a different challenge for BAK Assistant Airport Director Justin Bessler. "Our major issue this year was ice control," he said. "If you wait too long to apply countermeasures, ice will sneak up on you and stay put; if you put the chemicals down too quickly, though, they run off and leave surfaces largely unprotected."

The awards were administered by the Northeast Chapter of the American Association of Airport Executives, and presented during the annual International Aviation Snow Symposium.

NBAA encourages operators to recognize airports that meet the needs of business aviation during the winter season by submitting recommendations to Alex Gertsen, NBAA director of airports and ground infrastructure, at *agertsen@nbaa.org*. T&T

NBAA|BACE
OCTOBER 10–12, 2017 | LAS VEGAS, NV

Join 27,000 industry professionals for the most important three days of business aviation, with over 1,100 exhibitors, 2 static displays of aircraft – one inside the exhibit hall and the other outside at Henderson Executive Airport, and over 50 education sessions. Visit the NBAA-BACE website to learn more and register today.

REGISTER TODAY

www.nbaa.org/2017

UNLV Rescinds Request for Review of Sport Complex Site Near LAS

Recently, business aviation stakeholders operating around Las Vegas, NV weighed in on the FAA's obstruction analysis of a proposed University of Nevada Las Vegas (UNLV) stadium less than a mile from McCarran International Airport (LAS), and its potential effects on aviation operations over the city. Following this community feedback, UNLV rescinded its request to have the site near LAS reviewed.

"General aviation, including business aviation, has a significant presence in Las Vegas," said NBAA's Director, Air Traffic Services and Infrastructure Heidi Williams. "NBAA thanks all those who mobilized to submit feedback on this proposed UNLV sports complex site, because the input of the community helped UNLV rethink utilizing the proposed site. This is a great outcome that supports aviation safety in the Las Vegas valley."

The proposed sports facility was centered on a state-owned land plot set aside for use by UNLV located approximately 1,690 feet northwest of the approach threshold of Runway 19R. Local operators disputed an FAA Obstruction/Evaluation (OE) assessment that determined the new building would pose no significant impact to current and future IFR operations at LAS.

"The FAA's determination that this facility won't have an impact on existing or future approaches isn't accurate," said NBAA Access Committee member Keith Gordon, who also serves as co-lead representing NBAA in the FAA's Las Vegas Metroplex airspace reconfiguration project. "We're building PBN [performance based navigation] approaches to Runway 19L and 19R, but those don't appear to have been considered in the OE."

Gordon also expressed concern with the stadium's size, with recent capacity estimates more than double the 28,000 seats initially proposed. "Parking area and stadium lighting, LED scoreboards, fireworks and laser light shows all represent potential hazards [to aviation]," he said. "We've already seen in other locations how troublesome it can be for aircraft operating on approach paths near sports facilities."

NBAA will continue to monitor the issue as the university considers other possible locations for the stadium. T&T

DEDICATED TO HELPING BUSINESS ACHIEVE ITS HIGHEST GOALS. NBAA

THE OBSTACLES IN THEIR FLIGHT PATH

WERE GREATER THAN ANY STORM.

For America's aviation pioneers, the skies were a dangerous place. But Alfred Anderson sought to change all that. He became one of our country's first African American pilots and flight instructors—training the famed Tuskegee Airman. Anderson took flying seriously. A trait we share at NBAA. We've been promoting flight safety and security for thousands of our members for decades. Making the skies a safer place to be. Because business aviation enables greater opportunities. And at NBAA, we enable business aviation.

Join us at nbaa.org/join.

NBAA Small Business Committee Offers Tips for Flight Department Mission Statements

A new resource from NBAA's Small Flight Department Subcommittee, "Managing the Business of a Flight Department: Crafting an Effective Mission Statement," provides advice on how to develop a strong mission statement that offers internal and external parties the opportunity to consider why the operation exists, what it does on a day-to-day basis, and its value as a vital asset necessary to the successful execution of the company's goals.

Among the tips include:

Be Your Own Advocate: A well-written mission statement not only captures the internal goals and values of an aviation operation; it also advocates for the operation's importance within the greater company.

"You're basically defining why you're there, and of course the reason why you're there is because of the aircraft and how you're going to use that aircraft to support the larger corporate mission," said Kristin Huska, president and owner of Beacon Aviation Services.

Keep It Simple: There's no one correct way to form a mission statement; they may vary in length and specificity across organizations. That said, Keys proposed a simple guideline: the mission statement should be able to fit on a t-shirt.

"Everybody in the department should be able to repeat it without having to think about it, so that if you're in a discussion with the CFO, for example, you can say 'Hey, our mission is to provide you with the tools to be successful,'" he said.

Get Team Buy-In: Building consensus among team members turns what could be a declaration from above into an organic expression of the aviation operation's culture. Huska recommended structuring the process as a team development exercise, noting this can drive personnel to a common purpose.

"What I like to do is have everyone on the same page so instead of a flight department manager dictating, 'This is our mission statement,' it's more inclusive and you get a sense of your team's perception of their value and purpose," she said. "This also leaves room to 'course correct' if values have shifted over time and need to be revisited."

The complete document is available at *www.nbaa.org/admin/leadership/communicating-with-the-aircraft-principal.pdf*. T&T

The Envelope Please

My documented search for the next airplane has generated more reader feedback that I imagined possible. Perhaps I shouldn't be surprised that pilots are opinionated. Boy, we love our airplanes! I heard from lots of MU2, Commander, and Conquest owners. From Eclipse lovers. From King Air pilots. From Citation 501 folks. Even a Piaggio and a Starship operator. Each one completely convinced that their airplane was the perfect choice. Of course, every airplane has strengths and weaknesses. The cool thing is we have numerous choices. I began this quest planning to spend $1 million dollars. Along the way, I realized that everything I wanted would cost twice that.

I have made my decision.

The choice is the Citation Mustang. Here's why: I know the airplane.

Having operated a new Mustang (510-008) for five years, it fits like a glove. In my opinion, it's the "best bang for the buck" of any Citation ever built.

It will fly 350 knots TAS at 95 gallons per hour, FL 410 capability, almost 1,200 nm range, and a 750 pound useful load with full fuel. It has the fantastic Garmin G1000 system with an amazing autopilot, and three big screens for aging eyes.

The Mustang also features cavernous baggage, awesome brakes, a great air conditioning system, and a landing reference speed of 88 knots.

Most importantly, it's the easiest airplane I've ever flown. With almost 500 delivered, it has the best safety record of any single-pilot-certified jet. Knock on aluminum. Also comforting is the fact that the used Mustang market is quite vibrant with numerous units changing hands each month.

Part of my decision involved training. I am a big proponent of simulator training. FlightSafety has a robust program with several full-motion, modern sims not available for many of the turboprops I looked at.

I know the manufacturer.

Quite simply, Textron Aviation (Cessna, Beechcraft) takes care of their customers. The convenience of their mobile service trucks is the closest thing to owning a car. I literally hand the hangar keys to the maintenance technician and he locks up everything when he is finished. Textron offers hourly paid maintenance programs for engines, airframe parts, and labor, that allow me to budget most operating expenses. Certainly, there is a cost for this level of service, but it works for me.

I know the people who fly them.

Almost all airplanes have user groups. From the single-engine Cirrus, to owner-flown jets, pilots love to chat online, meet in person, and socialize with their peers. Interestingly, some of the oldest airplanes I looked at continue to receive incredible support from companies like Mitsubishi for the MU2 and Twin Commander for their fleet.

For the Mustang, the Citation Jet Pilot's Association has created a second family for me and Patty. We share operating techniques with other owners and meet numerous times annually to become safer pilots. Sometimes we drink refreshments. It's a lifestyle that I enjoy. I know a number of Citation owners who would never think of owning a different brand of airplane simply because leaving the owners' group would stress too many friendships.

So now I have decided on a Mustang. There are 45 airplanes on the market. Which one for me?

Next time we'll meet N416DM.

Fly safe.

With 6,000-plus hours in his logbook, David Miller has been flying for business and pleasure for more than 40 years. Having owned and flown a variety of aircraft types, from turboprops to midsize jets, Patty and David currently fly a Citation M2. You can contact David at davidmiller1@sbcglobal.net.

Ad Index

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

TWIN & TURBINE

is now ONLINE!

View the entire magazine on the updated site!

Viewable on any device!

- Current Issue
- Issue Archive (2015)
- Purchase Back Issues
- Page Turn Version
- Comment on Articles
- Advertiser Spotlight
- Advertiser Links
- Feature your plane
- Special "Jet Journal" Section
- Contact Us

www.twinandturbine.com

DEDICATED TO HELPING BUSINESS ACHIEVE ITS HIGHEST GOALS. NBAA

CROSSING THE ATLANTIC WAS EASY

COMPARED TO NAVIGATING CONGRESS.

When "Lucky" Lindy made his transatlantic crossing, he didn't have to deal with an ocean of congressional wrangling (maybe that's why they called him "Lucky"). The prevailing winds blew in his favor. But today, those winds have changed. Flying for business is more scrutinized than ever. Luckily, there's NBAA. We've made a home on the Hill, so that our members can make a living in the sky. Because business aviation enables economic growth. And at NBAA, we enable business aviation.

Join us at nbaa.org/join.