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TBM

OWNERS AND PILOTS MAGAZINE

SPRING 2015

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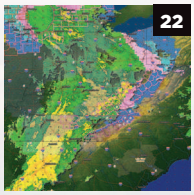

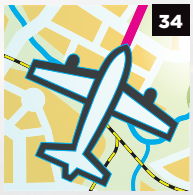

DEPARTMENTS

FEATURES

Gearing up for spring flying

A colder and harsher winter than most of us would have liked is finally in our rear-view mirror, and spring is here. I hope everyone had the opportunity to fly as much as possible, and it makes me very happy to report that we have had no accidents within our community this winter. Our focus on ice and cold-weather flying last year seems to have helped.

Remember that with the onset of spring come thunderstorms with all the challenges they present, including wind shear, icing and turbulence. Let's be sure we always get a thorough weather briefing and sharpen our radar skills. We understand that the NEXRAD system is for longer-range planning and the onboard system is for avoidance. If you have any questions or doubts about your radar skills, take some training with instructors who specialize in this equipment. We have several of them listed on our website.

The board of directors of your TBM Owners and Pilots Association has been working diligently on issues ever since this year's terrific convention in New Orleans. If you missed last year, you really missed out. We even had a visit from some Martian pilots one evening! We had lots of fun and, even more important, great seminars. I know I learn and relearn each and every year critical aspects of safely flying the aircraft.

There will be more to come as the year progresses, but it's safe to say that this year's convention in Charleston, S.C., will be another great event for companions and pilots alike. No other city holds a richer history than Charleston.

But before that, we have various safety seminars around the country, Sun 'N' Fun and Oshkosh to look forward to. Whew, I get tired just thinking about everything we have planned.

As for board business, we had our winter meeting in South Florida on Feb. 13 and accomplished quite a bit. I have several items to report. First, it was clear to us that members were interested in an Angle-of-Attack indicator for the TBM. The safety committee asked for the board's support in putting this item on the action list with Socata, and we voted unanimously to do so. Socata will investigate possible solutions along with pricing and bring this back to our membership.

Other items of business included the resignation of longtime member John Springthorpe. John was a valuable asset to the TBM community, and we wish him well with his new airplane. John will stay involved with us and continue to print this beautiful magazine that you are reading. David Kaplan was nominated to fill John's remaining term and will stand for election at the convention in Charleston.

We discussed other ideas to keep our safety seminars fresh and exciting and to bring more hypoxia training and awareness to the community.

Those are the major items we are working on — along with continuing to address various maintenance and cost items with Socata. I must say the Socata folks have been very receptive to our ideas and concerns, and we appreciate their strong desire to work with TBMOPA and continue to improve the ownership experience for all of us.

Blue skies and safe flying,

Frank J. McKee
Chairman TBMOPA

Remember that with the onset of spring come thunderstorms with all the challenges they present, including wind shear, icing and turbulence. Let's be sure we always get a thorough weather briefing and sharpen our radar skills.

TBM
OWNERS AND PILOTS MAGAZINE
SPRING 2015 VOLUME 5/NUMBER 1

CORPORATE OFFICES
1931 Commerce Lane, Suite 5, Jupiter, FL 33458
Telephone: (561) 841-1551 Fax: (954) 252-3935

FOR SUBSCRIPTIONS, REPRINTS, BACK ISSUES,
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CONTACT THE EDITOR:
Lyn@AJPublications.com

CONTACT THE PUBLISHER
Thierry@AJPublications.com

TBMGear.com store becomes reality

Andrew Knott's decision to retire from his long-term position as executive director at TBMOPA was the catalyst for coming up with new innovative ways to get things done once our beloved administrator is relaxing on a warm beach somewhere. Over the past decade, Andrew added many "claim-to-fame" initiatives including our website and the TBMOPA store. Administered by Andrew's lovely wife Elizabeth, the store was created with relatively few items and zero inventory. At the board's direction, it was determined that the online store would be a convenience to members and not a for-profit venture.

That all changed when we had to replace the existing store. The options included continuing the store as it was run or come up with a totally new concept. Research helped us understand how other aircraft manufacturers were handling their stores. The board was intrigued by Piper, Honda Jet, Beechcraft and AOPA stores, run by an outsourced organization. It allowed these organizations to offer an ever-expanding line of custom logo products to enthusiasts, dealers and employees.

After searching for a qualified vendor, which could provide a turn-key program for us, we found the answer. The company, Advanced Online in Dallas, had the administration, inventory, marketing and web-based technology to do exactly what we wanted. Discussions with Socata cleared the way for TBMOPA to market TBM-branded products and to receive a markup percentage from every item sold.

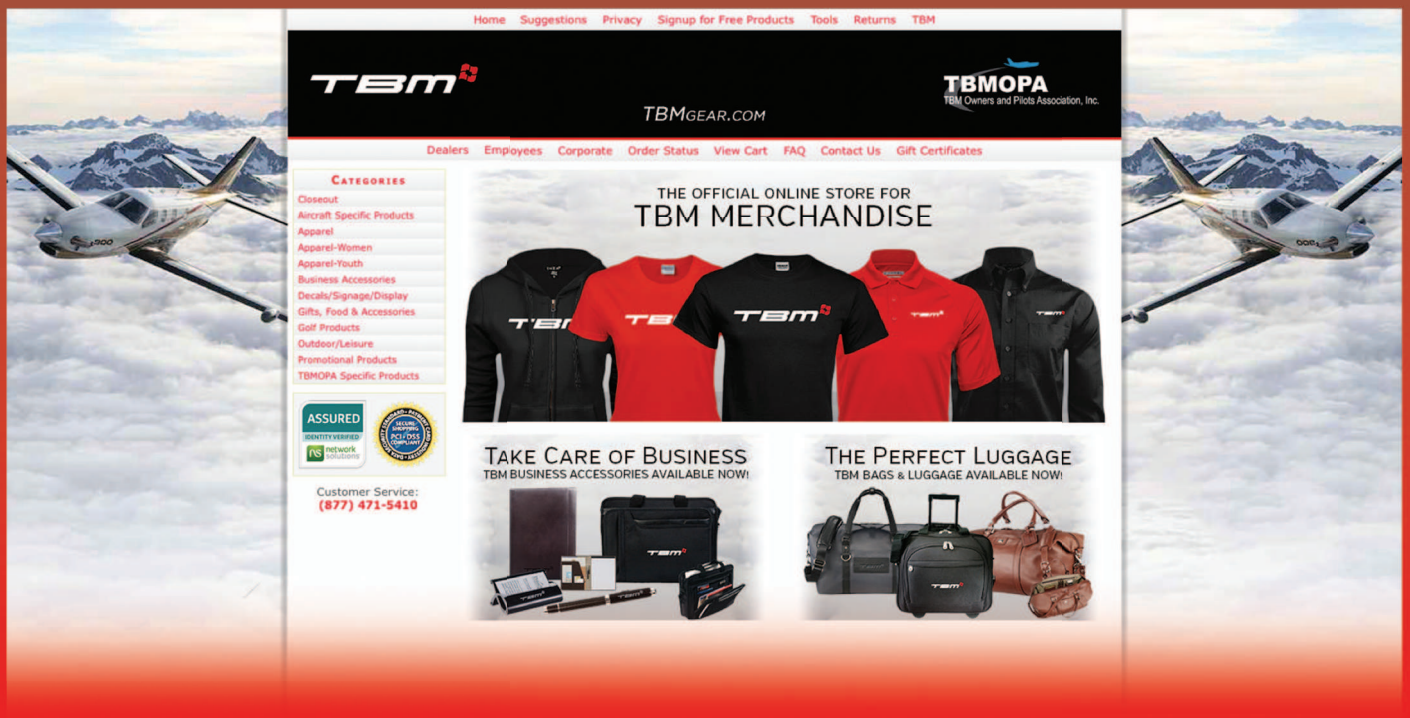
Socata management expressed an interest in supporting TBMOPA with this valuable investment. Working together, TBMOPA and Advanced Online made the initial investment of creating the store site and designing the logoed items to be sold.

"We invested $1,500 to cover our portion of start up items," said Brian Dunsirn, board member and store supporter. Our organization also took on the risk of any returned inventory. In exchange, TBMOPA could earn from 10 to 30 percent on items sold. These funds would cover our initial investment, any inventory risk, while providing cash to the organization that would ultimately support programming and dues.

The only requirement from Advanced Online is that the store generate at least $50,000 in sales to justify its investment. If this level is not met by the first year, we can continue the store for another 12 months (plus a $3,000 minimum fee) to prove out our concept. If by then the minimum is not met, the store would close.

To help us meet the minimum, all TBMOPA annual conference items will be sourced from the store, and dealers have committed to buy promotional items. Socata will buy its items from the store, and every new TBM 900 customer will receive a $500 gift card for store purchases. The store is accessible on both the TBMOPA and Socata websites and directly at **TBMGear.com**.

Initial results are looking good. The store has sold $16,000 in merchandise in the first four months. We need your help in making the store a long-term success by supporting it whenever you can. Look for the monthly promotions published on our website. Thank you and enjoy TBM and TBMOPA logoed clothing and accessories.



Need a second airplane?

Remember the days when you hopped in a small airplane and just went flying? For no other reason than you just wanted to go flying? However, you might pause to hop into your single-engine turbo-prop just for fun for lots of reasons, not the least of which is the cost of operation.

Meet the Sun Flyer, a small two-place airplane that uses solar panels to charge the battery packs that power its 32-kilowatt electric motor. Average cost of recharging those batteries? One dollar! Of course eventually you'll encounter the other maintenance costs associated with owning an airplane, but imagine flying your airplane for a couple of hours (up to four hours on a clear day) for the cost of a buck?

The Sun Flyer is in development by Aero Electric Aircraft Corp. of Denver and has already accomplished several successful test flights. Price tag on the paradigm-shifting aircraft is projected to be in the neighborhood of $200,000, and certification is expected within the next two years. Find more at **AEAC.aero**.

2015 Save-the-Date Schedule

Jan. 22-24 Melbourne, Fla.
Melbourne International Airport (KML)
Host: Dr. Paul Buza,
Southern AeroMedical Institute

March 6-8 Fredericksburg, Texas
Gillespie County Airport (T82)
Host: Cutter Aviation

March 19-21 Boca Raton, Fla.
Boca Raton Airport (KBCT)
Host: Daher-Socata

June 25-27 Muncie, Ind.
Delaware County Regional Airport (KMIE)
Host: Muncie Aviation

Sept. 10-12 Groton, Conn.
Groton-New London Airport (KGON)
Host: Columbia Air Services

Nov. 12-14 TBA


The crash site of the single-engine Beechcraft Bonanza

But *HOW* did the music die?

On Feb. 3, 1959, a single-engine Beechcraft Bonanza took off from a Mason City, Iowa, airport headed to Fargo, N.D. On board were Richie Valens, Jiles Richardson (aka The Big Bopper) and Buddy Holly. The aircraft crashed soon after takeoff, killing all on board, including pilot Roger Peterson. Songwriter Don McClean called it The Day the Music Died.

The original investigation determined that pilot error and snow caused the crash. Now the National Transportation Safety Board may be taking a second look. Responding to new questions raised by aviation enthusiast and retired pilot L. J. Coon, the agency said, "You have gotten our attention."

Coon's communication to the NTSB sited additional contributing factors such as carb ice, issues with the Bonanza's "ruddervators" and potential weight-and-balance issues regarding luggage and the four souls on board.

The NTSB has two months to decide if it wants to revisit the original investigation.


The memorial on the the crash site which took the lives of Richie Valens, Jiles Richardson (aka The Big Bopper) and Buddy Holly

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Grid-It

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CocoonInnovations.com

Techlink Recharge 2000

A portable USB charger with the latest lithium-ion battery technology built in, Techlink's Recharge 2000 helps you keep your iPhone, iPod, digital cameras, and other USB devices powered and ready for use. Simply connect your iPhone or iPod to the Recharge 2000 and it starts charging automatically. And when you're done, just slip the conveniently compact charger into your pocket.
Apple.com

Jawbone Jambox

For the frequent traveler, a decent speaker is a hotel room luxury that's worth splurging on. You'll certainly be rocking out with the wireless Jambox— it's a penny under $200 — but it has some great features. Although it's properly portable, it boasts an output capacity of 85 decibels and a 10-hour battery life. You can use it as a speaker phone for cellphone and VoIP calls.
Jawbone.com

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FLYING TI

Managing wake turbulence is easy, as long as you know what to expect.

BY BUD CORBAN

Remember when you were learning to fly and your instructor had you practice 360-degree, steep turns without gaining or losing altitude? Remember how impossible that task seemed as the bank became steeper (often to 55 degrees or more) and you fought to maintain altitude, airspeed and composure all at the same time.

The myth was that, in smooth air, you could always tell you'd done a good job if you flew through a speed bump as you rolled out of the turn. Call it prop-wash, jet-wash (for those fortunate students training in turbines), wing-tip vortices or wake turbulence, that short-duration bump was usually regarded as a badge of honor. It was a sign that you'd made a

HE WAKE

proper 360 and completed the maneuver at the entry altitude.

Sorry, but you really hadn't. The invisible vortex generated by an aircraft during a maneuver doesn't hover in the sky. It begins to fall toward the ground practically as soon as it's generated. The FAA estimates the rate of descent could be as much as 200-300 fpm. Flying through your own wake is still a good sign in practicing 360 turns, but it usually means you've actually recovered at a height slightly below your entry altitude.

There should have been a message there for those aviators perceptive enough to understand it, but apparently, not everyone was that smart. I know I wasn't, nor were any of my instructors. I just accepted it as an ultimate truth.

The lesson that everyone seemed to have missed was that all aircraft, not just 200-300 passenger airliners and four-engine freighters, drag a wake of turbulent, rotating air behind them, and anyone who flies through that disturbed air could feel a lot more than simply a bump. If you manage to cross through your own wake, you may be surprised at the intensity of the vortices, but it's usually no worse than what a weather briefer would refer to as moderate chop.

If you're flying through someone else's vortex and he's bigger than

Flying the Wake

you are, you could be in for a big surprise. When the airplanes are dramatically mismatched, say a Skyhawk and Boeing 737, the Boeing obviously won't be bothered by the Skyhawk's wake, but a 172 that blunders into the air tunnel created by a 737 may be in for a wild ride.

Of course, pilots have known about wake turbulence far longer than accident statistics have labeled it as a hazard, but the introduction of one aircraft, the heavily wing-loaded Boeing 757, significantly highlighted the risk. The FAA was warned as far back as 1989 that the wake of a 757 was decidedly more dangerous than that of most other heavy jets. The agency even did some tests with a DC-9 flying in trail of a 757 and discovered that, under the worst possible conditions, the tip vortices could upset the small McDonnell Douglas jet. They also flew a 757 past a small building fitted with sensors for wind speed, direction and rate of onset, and only succeeded in destroying all the sensing equipment.

Wing-tip vortices are not-so-simply a result of lift gone berserk and turned horizontal. A wing produces lift by generating more pressure on the bottom than the

top surface. Stated far too simply, an airfoil produces a pressure differential between air flowing across the top and bottom of the wing. At the tip, this differential causes high-pressure air from the wing's bottom surface to flow over the top of the wing and then swirl downward, imparting a circular wing-tip vortex.

All airfoils produce a wake when they're generating lift. At the tip, the high-pressure air flowing under the bottom of the wing curls and turns from lift to a circular vortex. The greater the pressure differential, the stronger the vortices generated by the airfoil. The vortex produced by the left wing tends to roll right or clockwise, whereas the right-wing generates a counter rotation to the left, or counter-clockwise.

A number of factors contribute to the strength of a vortex — wing loading, aircraft weight and speed, angle of attack, tip design and winglet shape (if any). Under the worst conditions – and the Boeing 757 seems to embody most of them most of the time – a fully developed vortex can tear an airplane apart. Even if it doesn't, the encounters most often occur at relatively low altitude, and any upset can make it extremely difficult or impossible to recover in the vertical space available.

The most obvious potential victims of encounters with wing-tip vortices are corporate turboprops and business jets since they're nearly always filed IFR and use the same airways and approaches as the major airlines use. Even corporate turboprops and business jets weighing as much as 30,000-40,000 pounds or more need to be wary of wing-tip vortices. A heavily loaded Boeing 747 or Airbus 380 can outweigh the largest corporate aircraft by factors of 30 or 35 to one. Larger airplanes produce significantly stronger vortices because the wings must produce more lift to support the weight of the aircraft.

Sadly, no matter how well established the hazard, the FAA tends to react in a knee-jerk fashion, passing new safety regulations only after the bodies have been buried from the last crash. For that reason, the FAA established some standard operating procedures to be followed any time your aircraft is sequenced behind a heavy jet.

The logic was that if pilots followed these simple rules, they'd stay out of trouble.

1. When departing behind a heavy, plan to lift off and be in the air well before the big jet's rotation point, then climb out well above his departure path. If that's not possible or if you have any significant crosswind and are in the queue scheduled to follow a larger aircraft that has just departed, ATC will normally issue a three-minute hold to allow any tip vortices to dissipate. Some pilots in too much of a hurry may elect to waive the hold, but that's never a smart idea, no matter what the size of your aircraft. Whether you're issued a hold for wake turbulence or not, you can improve your odds of missing any wake encounter by requesting a sidestep after liftoff. The airline runway at my home airport of KLGB offers a two-mile runway 30 that will accommodate pretty much any airline traffic. The prevailing wind is usually 250 to 280 degrees, so there's nearly always a left crosswind for takeoff. Under those circumstances, I'll typically ask for a left sidestep, turn to 270 degrees or so after cleanup and deviate well to the left of the airlines' departure course.

2. When landing behind a large aircraft, plan to meet the runway well past its touchdown point. When a wing stops developing lift, wing-tip vortices dissipate almost immediately, so there's little chance of a vortex encounter.

3. Wing-tip vortices generated by a heavy aircraft will normally tend to drift slowly away from the centerline. If there's any crosswind, however, be aware that the vortices may linger on the runway for longer. In crosswind conditions, the upwind vortex may tend to remain on the runway for longer than normal.

4. Keep in mind that it is possible for a vortex on closely positioned, parallel runways to drift across to yours, an especially dangerous situation when your runway may not have had a departure for 15 minutes or more.

5. To avoid flying or crossing behind a heavy's vortices, maintain your altitude above the larger aircraft's flight path and plan to land well past its point of impact.

6. When approaching behind a heavy aircraft on an ILS procedure, remain at or above the glideslope to avoid wake encounters.

For the most part, following the rules above will keep you out of trouble. Most of us who've been doing this for a while have our own war stories that assume progressively more risk the more often they're told. We still hear about the occasional vortices encounter, usually involving a turboprop and an airliner, but those instances are usually recoverable.

It is possible to follow the rules and still get caught in the vortex trap, however. One accident above Orange County, California, in 1993 was particularly devastating. It attracted national attention because the controllers and pilots involved were doing pretty much everything right.

A Westwind was following a Boeing 757 on an ILS approach into runway 19R at John Wayne Airport, operating in clear, VFR conditions. The Westwind captain knew he was following a heavy jet, though he didn't know it was that of the 757. He was nevertheless wary of the situation and announced on the CVR, "Perhaps we'd better fly this one a dot high," referring to the glideslope. What he could not have known was that most of his approach was actually below that of the Westwind. The corporate jet crashed two miles short of the airport and all on board were killed.

Pure weather phenomena such as downbursts/microbursts and wind shear are usually reasonably large occurrences and, therefore, may be susceptible to sensing by Doppler radar. Unfortunately, tip vortices are totally man-made, much smaller and more localized, and that makes it unlikely there'll ever be an onboard electronic sensor capable of detecting their presence.

The good news is you can usually outguess tip vortices and avoid their consequences if you simple follow the checklist above.

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A HAIR'S BREADTH

Our airplanes are certified for flight into known-ice, but what does that really mean? And if we do begin to accumulate ice, how much is too much?

BY THOMAS P. TURNER


TBM850
N426TB

Icing Conditions

Condition	Cloud Type	Maxiumum Droplet Size			Maximum Exposure
		Microns	Inches	Millimeters	
Continuous maximum	Stratus	40	0.0019	0.05	17.4 nm
Intermittent maximum	Cumulus	50	0.0020	0.05	2.6 nm

Icing Certification Maximum Exposure Criteria (FAA)

Approximately 13 minutes after departure, the pilot reported the airplane was accumulating ice. He requested and was cleared to descend from 5,000 to 4,000 feet MSL. Subsequently, the pilot requested and was cleared to descend to 3,000 feet, and to proceed direct to the initial approach fix for the RNAV (GPS) 36 approach for landing at a nearby airport. No distress call or additional ATC communications with the pilot were recorded. The airplane impacted trees and terrain approximately 17 miles south of the airport. Tree deformation, ground scars and craters were consistent with a near vertical impact.

Instrument meteorological conditions with low ceilings, reduced visibility, light rain, mist and drizzle prevailed at the departure airport and along the flight route. The temperature profile in the accident area was +1 degree Celsius at the surface, -3 degrees C at 3,000 feet, and above freezing at 7,000-8,000 feet. Super-cooled large droplet moisture (SLD) was likely present in the accident area at and below 5,000 feet and produced moderate to severe clear icing on the airframe in the minutes prior to the accident. Propeller blades exhibited physical evidence (blade bending and twisting) consistent with high power (at or near the low-pitch/high-rpm range) and rotation (symmetrical energy) at impact. No evidence of an in-flight mechanical or flight-control malfunction was found that would have rendered the airplane uncontrollable prior to the impact.

NTSB probable cause: The pilot's inadvertent flight into severe icing conditions. A contributing factor was the pilot's inadequate preflight planning.

Two pilot reports (PIREPs) from the immediate accident area were filed in the hour before the accident airplane's departure. FAA records confirmed the pilot received both of these PIREPs when he briefed and filed for his departure just before his 0918 (local time) departure. At 0838, a Beech BE58 at 7,000 feet MSL reported sky overcast 1,000 feet with top of overcast at 6,000 feet, temperature 10 degrees Celsius, wind 221 degrees at 39 knots, light icing at 3,000 to 4,000 feet during climb. At 0905, a Mitsubishi MU2 at 7,000 feet MSL reported

THE FREEZING RAIN MYTH

We're taught that conditions resulting in freezing rain involve a shallow band of freezing air near the surface, perhaps only a few hundred feet thick, over which lies a band of warm air with above-freezing temperatures. Far higher, a second freezing layer marks the boundary, above which the air is below freezing again. Snow forms in the cold air at altitude. As snow falls through the above-freezing layer of air, it melts, with water droplets coalescing into larger, super-cooled raindrops. These large raindrops, upon striking surfaces chilled to below freezing by the cold air near the surface, flash-freeze onto those surfaces. This creates a thick and irregular coat of clear ice — freezing rain.

This model, in which above-freezing air is just above the surface, suggests pilots employ these common avoidance and escape tactics for flight in areas of freezing rain:

1. Cruise a few thousand feet above the height of the freezing rain and you'll remain in ice-free air.

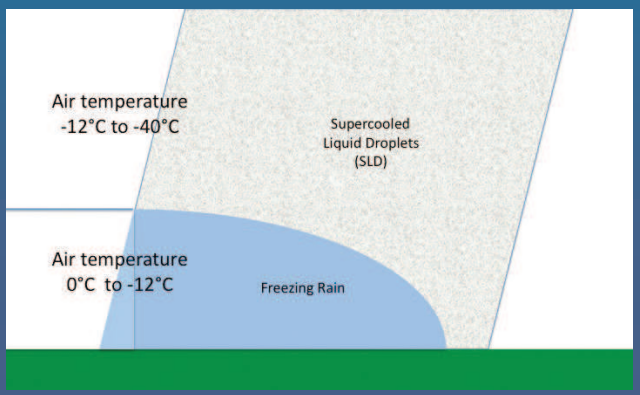
2. If you encounter freezing rain conditions, climb. Above-freezing air is just a few hundred feet above you.

The trouble is that this set of conditions is what's happening in only 8 percent of all freezing-rain events, according to Scott Dennstaedt, an instrument flight instructor and former National Weather Service research meteorologist now employed by ForeFlight LLC as its weather scientist. He also owns AvWxWorkshops.com, a subscription-based aviation-weather training website. In 92 percent of all freezing-rain events, Dennstaedt advises, below-freezing temperatures exist upward from the surface with no warm band of above-freezing air above the lowest layer.

Instead, this is how freezing rain usually forms: Above a boundary defined roughly by the height where the temperature is at -12 degree C, small super-cooled water droplets are suspended in the atmosphere. These droplets collide with one another and fall into the lower levels, where the temperature is still below freezing, but closer to the freezing point. Upon striking surfaces chilled to below freezing by the cold air near the surface, this creates a thick and irregular coat of clear ice — freezing rain.

The avoidance and escape techniques we're all taught won't work in 92 percent of all instances when freezing rain occurs. Since there is no band of above-freezing air overlying the freezing rain, flying at a higher altitude still exposes the airplane to SLD conditions for which no aircraft is certificated. Trying to escape by climbing out of freezing-rain conditions, hoping to melt off the ice accumulation (a freezing-rain strategy we're all taught), would only result in adding additional ice to the airframe.

Even in known-ice airplanes, the only workable strategy when freezing rain is reported, Dennstaedt tells us, is to avoid flight in clouds or precipitation anywhere near or above freezing rain unless the outside air temperature is colder than -40°C, the coldest temperature that supports SLD.



sky overcast 900 feet with top of overcast at 5,000 feet, light icing at 2,300 to 3,300 feet during climb.

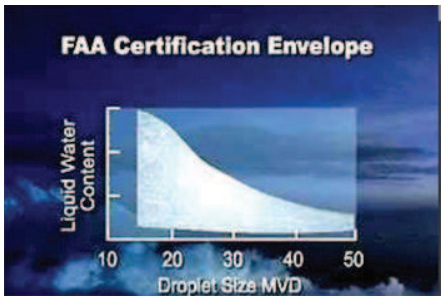
It was Christmas Eve. The airplane had a broken alternator switch, and the pilot's final flight was to attempt a hop to nearby Jonesboro, Ark., to have the switch replaced before flying to meet his family for the holiday. Weather near the departure airport was 200 overcast, visibility 1½ miles and +1 degree C surface temperature. Jonesboro (KJBR) was reporting 700 overcast, visibility 10 miles, with a 15-knot wind, +1 degree C surface temperature and rapidly falling barometric pressure. The pilot may have thought he could rapidly climb through the ice (after all, PIREPs called it "light") into an inversion above the clouds, and then descend rapidly through the clouds in the approach to his destination. The holiday may have increased his perceived stress to make the flight despite the adverse conditions.

TBMs are certified for flight in icing conditions — so called known-ice approval. But in what conditions exactly does known-ice approval permit you to operate safely? Most pilots don't know that ice certification provides a relatively small amount of ice protection. When is ice accumulation too much for any airplane?

FAA certification for flight in icing conditions requires that the airplane's ice-protection systems be adequate to prevent and/or remove accumulations of ice in one of two conditions — continuous exposure and intermittent exposure. Known-ice airplanes are permitted to remain in continuous icing conditions only in stratus clouds, when water droplets are no more than 40 microns in diameter. That's 0.0019 inches (0.05 mm). Even then the certification assumes the pilot will exit icing conditions before traveling 17.4 nautical miles; any more exposure and the accumulation may exceed the system's ability to remove ice.

In cumulus clouds only very short, intermittent exposures are approved. The maximum droplet size under known-ice protection is 0.002 inches (0.05 mm). And then, exposure is limited to 2.6 nm and requires an immediate exit from icing conditions to avoid overwhelming the protection system.

Any water droplet greater than 50 microns in diameter is considered a "large droplet." If the water is in liquid state, and the temperature is at or below freezing, it is a "super-cooled" large droplet or SLD. By definition, no ice-protection system is certified for flight in SLD conditions,



in icing in stratus clouds for more than 17.4 nm of continuous exposure, or in cumulus clouds for more than 2.6 nm of exposure.

To put this in perspective, the diameter of a human hair is 90 microns, or 0.070 mm, nearly 150 percent of the maximum exposure limit. This means that, at or below freezing temperatures, if water droplets are large enough to be perceived as individual drops or "streams" on your windshield or wings, they are too big for even known-ice airplanes to be protected. No matter what you're flying, you need to exit visible moisture immediately.

Have a safe flight by keeping far more than a hair's breadth away from airframe ice. TBM

WHAT GOES UP...

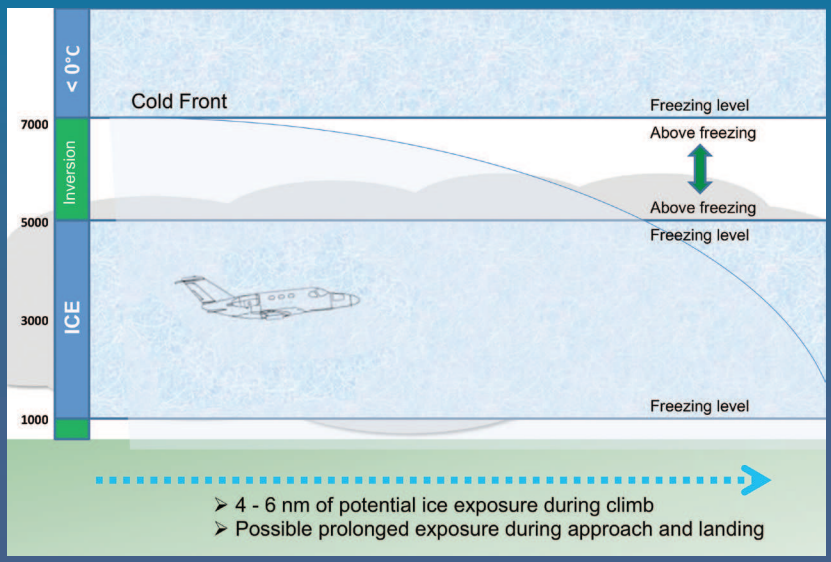
No matter how well your airplane can climb and cruise above icing conditions, eventually you've got to come back down to land. From a recent NASA Aviation Safety Reporting System Callback:

ATC...descended us to 2,000 feet and vectored us for the approach. We were having a little problem picking up the localizer. However we finally got a strong signal before the Final Approach Fix and decided to fly the approach....

The captain called, "Visual" and I said, "Landing." I tried to turn off the autopilot and had a hard time getting the autopilot warning off. The captain called, "Speed." I had gotten slow by about 3 to 4 knots, and we were about 200 feet off the ground. I said, "Correcting," and added power. I had no issue from there.

We crossed the threshold, and I started my crosswind correction. That is when the airplane took a hard bank to the right. The captain and I did everything we could to get the airplane on the ground. The landing was hard but we decided that the plane was able to taxi in. We asked to hold short of the center runway to collect ourselves, talk to the flight attendant, and resume the taxi. "Rudder INOP" displayed on the EICAS during taxi in.

We got to the gate, deplaned and then started making phone calls to report the rudder and hard landing. After that was done, a ramp agent told us there was some limited wing damage. We both went outside to see, and it was then that we saw a considerable load of ice built up on all leading edges and engine nacelles.



(ABOVE) Cross-section of the icing exposure. The pilot would have had to climb through nearly 5,000 feet of potential icing conditions to get on top and into the warmer air above (inversion). At typical climb speeds, that's at least 2.5 minutes of continuous exposure, covering approximately six miles of horizontal distance — all in SLD conditions even known-ice airplanes are not certified to handle.

FORECASTS REPLACED BY AUTOMATION

By Scott C. Dennstaedt

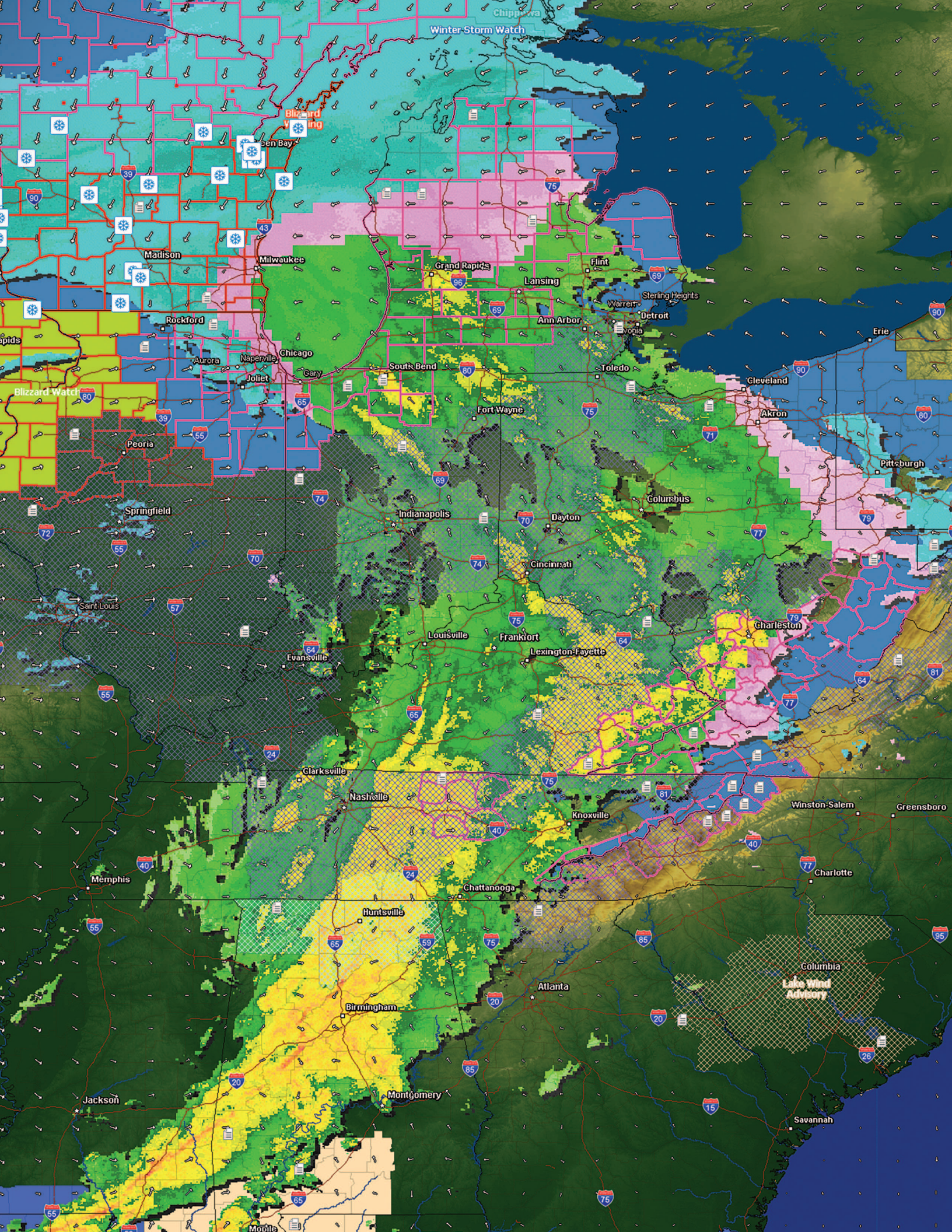
With tighter budgets and fewer human resources, more and more weather forecasts are becoming automated. You don't have to struggle to find automated forecasts. They are plastered all over the Internet, and some may even show up in your inbox or on your smartphone on a daily basis.

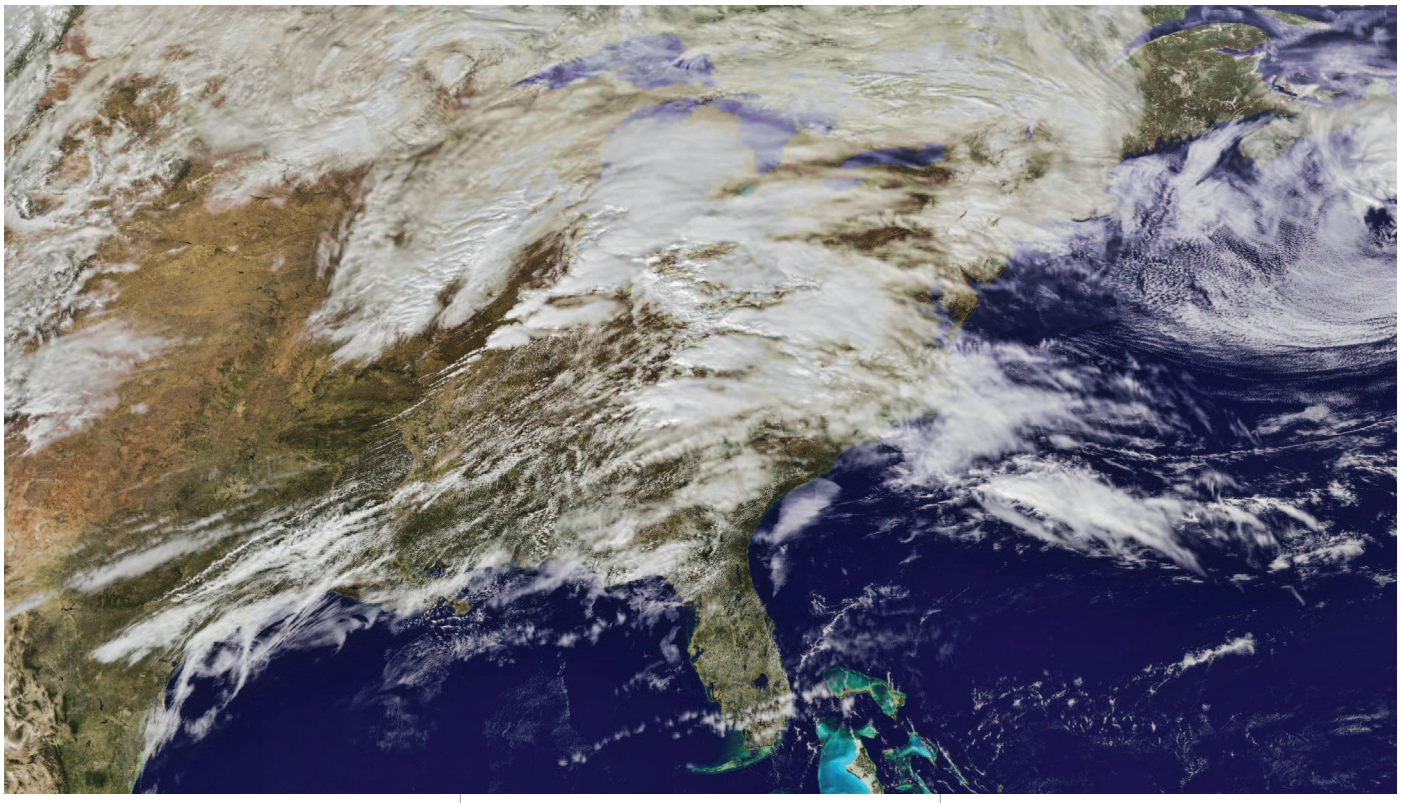
For years, pilots have relied on forecasts issued by highly trained meteorologists, but that's slowly changing. The Collaborative Convective Forecast Product or CCFP is one of these forecasts that on Nov. 1 was replaced with an automated version called the Collaborative Decision-Making Convective Forecast Planning guidance (which is still, coincidently, abbreviated CCFP).

A LITTLE REVIEW

Convective weather is undoubtedly the single most disruptive force affecting the National Airspace System (NAS), and these disruptions can quickly cause major delays in the system. So the best the FAA and NWS can do is pinpoint where those disruptions will likely be located in the near future and then develop a master plan for coping with the inevitable loss of this precious and busy airspace. Developing such a plan required a collaborative effort among the NWS, FAA and commercial air carriers. The Collaborative Convective Forecast Product was born in 2000 as the primary convective-weather forecast product used as input to develop this strategic plan.

Weather Channel Studios


Winter Storm Watch
Blizzard Warning
Blizzard Watch
Lake Wind Advisory
Madison
Milwaukee
Rockford
Aurora
Naperville
Chicago
Joliet
Gary
South Bend
Grand Rapids
Flint
Lansing
Warren
Sterling Heights
Detroit
Ann Arbor
Toledo
Cleveland
Erie
Fort Wayne
Akron
Pittsburgh
Peoria
Springfield
Indianapolis
Columbus
Dayton
Cincinnati
Saint Louis
Louisville
Frankfort
Lexington-Fayette
Charleston
Evansville
Clarksville
Nashville
Knoxville
Winston-Salem
Greensboro
Memphis
Charlotte
Chattanooga
Huntsville
Atlanta
Columbia
Birmingham
Jackson
Montgomery
Savannah
Mobile



The legacy CCFP was made available on the Aviation Digital Data Service (ADDS) website. You may have been tempted to use it on an occasional basis. The CCFP was a seasonal product that began in early March and ran through the end of October. During this time it provided a single convective forecast for strategic planning of en route aircraft operations within the NAS. It is not intended to be used for traffic-flow control in the airport-terminal environment, nor for tactical traffic-flow decisions.

As the name suggests, this was a collaborative forecast effort involving meteorologists for the Aviation Weather Center, commercial air carriers, Center Weather Service Units, Air Traffic Control Command Center and Environment Canada. Their ultimate goal was to produce a short-range forecast that aids in air-traffic flow management to reduce delays, rerouting and cancellations due to convective weather for the U.S. and its coastal waters as well as southern-most portions of Ontario and Quebec, Canada.

CCFP CRITERIA

Deep, moist convection (for the purposes of the CCFP forecast) uses criteria that are quite different than the criteria used for issuing convective SIGMETs. To be included in the CCFP, the area of convection must meet the following minimum forecast criteria:

- ►A coverage of at least 25 percent with echoes of at least 40 dBZ composite reflectivity; and
- ►A coverage of at least 25 percent with echo tops of FL250, or greater; and
- ►A confidence of at least 25 percent.

Note that all three of these threshold criteria combined are required for any area of convection of 3,000 square miles or greater to be included in a CCFP forecast. Besides areas, lines of convection can also be identified in the forecast. Lines can stand alone or be included within an area. Note that these lines or areas are instantaneous forecasts. That is, they describe the convective coverage at a particular point in time (e.g., 2100 UTC), not over a period of time.

THE NEW KID ON THE BLOCK

The automated version of the CCFP introduced last year is still considered experimental. Similar to its earlier counterpart, this new guidance is a graphical representation of convection meeting specific criteria of coverage, intensity, echo height and confidence mentioned above. The experimental CCFP guidance graphics are produced every two hours and valid at two, four, six and eight hours after issuance time. This is done 24 hours a day, seven days a week, all year long (certainly a distinct improvement to the legacy CCFP).

NOT A FORECAST FOR THUNDERSTORMS

General Aviation pilots must be careful when using the CCFP for preflight weather analysis. Most are unaware that the CCFP is not a thunderstorm forecast. It is created

Coverage	Isolated	Widely scattered	Scattered	Broken
Percentage	< 10 percent	10 – 24 percent	25 – 39 percent	40 – 74 percent
Tops (feet MSL)	40,000 +	35,000 – 39,000	30,000 – 34,000	25,000 – 29,000

Shown here is a six-hour automated CCFP forecast issued during the 0000 UTC cycle and valid at 0600 UTC.

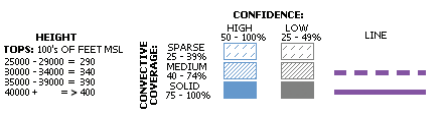
to provide forecast guidance to air-traffic managers and may not always take into consideration areas or lines of convection that may or may not meet convective SIGMET criteria. Unlike the criteria used for convective SIGMETs, the CCFP threshold criteria do not consider lightning, precipitation or severity (i.e., tornadoes, large hail or damaging winds). It's really all about describing convection that is disrupting busy airspace.

Another unique aspect of the CCFP that continues to confuse some pilots is the echo tops forecast; the echo tops provided in the CCFP are not a forecast for maximum tops as they are in a convective SIGMET. The best way to understand this aspect is to use an example.

Assume that an area of convection meeting the CCFP criteria has been identified as a polygon on the graphics. Using the table below, the automated tool believes that, with this area of convection, isolated coverage of echo tops will exceed 40,000 feet. On the opposite extreme, broken coverage is expected with echo tops anticipated to be between 25,000 feet and 29,000 feet. Even though widely scattered or isolated echo tops are expected to occur above 35,000 feet, the CCFP graphic will show scattered (sparse) coverage at 34,000 feet since most of the echo tops will be located at or below 34,000 feet in the example at the bottom of page 24.

CCFP GRAPHICS

The automated CCFP graphics can be viewed online at AviationWeather.gov/ccfp/. Each of the four forecasts for two, four, six and eight hours will largely consist of one or more hatched or filled polygons describing areas of convection (if any) that are expected to meet the CCFP criteria. The color of the polygons describes the confidence, and the hatching or fill denotes the expected convective coverage. Note that areas of higher convective coverage or lines of convection can be included within other polygons of lower convective coverage. Each polygon will also include a categorical echo tops forecast as described earlier.



This legend depicts the symbology used in the CCFP graphics to include categories for convective coverage, confidence and echo tops.

Coverage is identified within each area of convection, in one of three possible categories:

- Sparse 25-39 percent (sparse fill)
- Medium 40-74 percent (medium fill)
- Solid 75-100 percent (solid fill)

The confidence is an estimate that conditions defined by the minimum CCFP criteria will occur in the forecast polygon at the specified time and place. It is identified in one of two possible categories:

► Low confidence – 25-49 percent (border and fill gray)

► High confidence – 50-100 percent (border and fill slate blue)

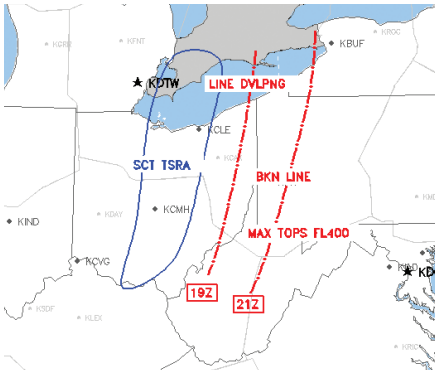
Echo tops within each area of convection are forecast in one of four possible categories:

- 25,000-29,000 feet MSL
- 30,000-34,000 feet MSL
- 35,000-39,000 feet MSL
- At or above 40,000 feet MSL

HUMAN IN THE LOOP

Despite the fact that the new CCFP guidance is totally automated, there is still a human element. As of March 3, the NWS will implement the experimental Collaborative Aviation Weather Statement (CAWS). The CAWS is a new product collaborated by NWS meteorologists, airline meteorologists and other airline and FAA personnel. Sounds vaguely like the legacy CCFP guidance, right? Well, yes and no. CAWS is event-driven and focuses on specific, convective impacts to the Core 29 airports and high traffic en-route corridors. So it's not a product that you will see issued in northern Montana, ever.

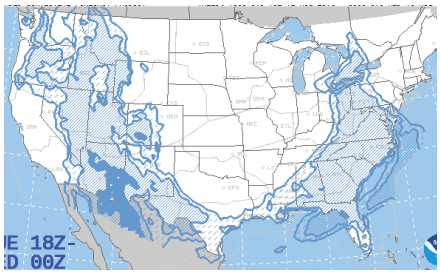
When the automated product isn't aligned with reality, forecasters can issue one of these statements. This could be due to convection that developed but was not properly depicted by the automated tool or perhaps it could be the opposite situation — convection that was expected and did not form or have a great enough impact. You can find the CAWS product here: AviationWeather.gov/caws.



The Collaborative Aviation Weather Statement (CAWS) will include a graphic such as the one shown here as well as a textual description of the situation.

EXTENDED CONVECTIVE FORECAST PRODUCT (ECFP)

The automated CCFP is only valid out to eight hours. However, to provide traffic planners and collaborators with a quick-look forecast of the greatest probability of thunderstorms (not just convection) beyond this period, the AWC issues an Extended Convective Forecast Product (ECFP) valid in six-hour time periods out to three and a half days (84 hours) in the future. The ECFP is updated four times a day and can be viewed online at AviationWeather.gov/ecfp.



The Extended Convective Forecast Product (ECFP) uses similar CCFP-style shading. Contours are drawn at 40 percent, 60 percent and 80 percent and represent the probability of thunderstorms. Hashed areas represent 40-59 percent probability; solid lined areas represent 60-79-percent probability; and solid blue-filled areas represent greater than 80 percent probability.

The ECFP planning tool is a graphical representation of the forecast probability of thunderstorms. The product will identify graphically where in the U.S. thunderstorms are the most likely based solely on the calibrated thunderstorm-probability forecast from the Short Range Ensemble Forecast (SREF) model. While this graphical product will use CCFP-style graphics, it is automatically generated and does not use the same CCFP criteria since this is a thunderstorm forecast. This is to facilitate ease of interpretation and use by those already familiar with the operational CCFP and is intended to support the long-range planning for CCFP-type of constraints in the NAS.

In the end, the CCFP can provide some useful forecast guidance concerning convective weather along your proposed route of flight, assuming you are aware that it is not a forecast for thunderstorms. Be sure always to integrate this forecast with other official guidance (especially convective SIGMETs) provided by the NWS before making any preflight decisions using this new automated guidance. TBM

Scott C. Dennstaedt is a CFI and former NWS research meteorologist now working as a weather scientist at ForeFlight. To learn more about aviation weather, please visit his website at http://avwxworkshops.com or on Twitter @AvWxWorkshops.

DOWNBURSTS: STILL A REAL THREAT?

A downburst is an insidious risk that can undercut your airspeed and drive you into the ground.

BY BILL COX

If you were flying in the 1970s and 1980s, you may recall the spate of accidents generated by wind shear and downbursts. The numbers were scary. Between 1973 and 1994, a dozen major airline crashes were associated with downbursts. Collectively, those close encounters with the angry sky accounted for some 500 fatalities.

If there was any doubt about the fallacy of the old instructors' assurance that "downdrafts never go all the way to the ground," the proliferation of airline accidents in downbursts during that period suggested otherwise.

There was even a near-incident in 1983 involving Air Force One. President Reagan was on board when his 707 landed at Andrews Air Force Base outside Washington, D.C., a few minutes before anemometers recorded a 150 mph gust. Though the Boeing was rocked by the severe winds, no one was injured and the aircraft was undamaged.

The last downburst/wind shear airline accident occurred in July 1994. A U.S. Airways DC-9 was on approach to Charlotte, N.C., when it was seized by a powerful downburst. The airplane crashed, killing 37 passengers and crew.

Twenty years later, downburst aircraft accidents are almost unheard of, and that's not because the phenomenon has become less prevalent. In May 2009, a downburst caused the collapse of the Dallas Cowboys practice facility near DFW airport. The same storm moved across the airport's huge runway complex 10 minutes earlier, but the universe of anemometers scattered around the airport provided warnings, and no incidents were reported.

In June of last year, another severe downburst was detected near Denver International Airport, but sensors allowed controllers to keep traffic away from the area until the threat had dissipated.

Wind-shear threats are still out there. I've been caught in downbursts twice, and both instances were nothing less than terrifying. Fortunately, improved crew training and predictive technology have stepped up to identify the problem and warn of areas of severe downdrafts.

Downbursts

Severe downburst was detected near Denver International Airport, but sensors allowed controllers to keep traffic away from the area until the threat had dissipated.

The term "downburst" originated with Dr. Ted Fujita and Dr. Horace Byers of the University of Chicago in 1977. The two meteorologists described a type of severe wind shear that could bring down practically any aircraft without afterburners. The downburst was primarily associated with thunderstorms, but Fujita and Byers suggested it could also occur in nearly clear air under the proper conditions.

In its most classic form, a downburst assumes a large, circular shape, perhaps three to five miles across — a funnel of air that descends from a mass of unstable turbulence, hits the ground and bounces outboard, away from the center. (A microburst is simply a small downburst, usually less than two miles in diameter. It may generate horizontal winds in excess of 100 mph, usually highly localized and short term.)

A downburst can hide inside a rain shaft although dry downbursts aren't uncommon. Downbursts sometimes originate from clouds at high altitude that seem to pose no threat to aircraft flying at lower levels. They also can live inside virga that descends from several thousand feet and falls through apparently clear air.

Downbursts go through three distinct stages:

- The actual descent or downburst toward the ground;
- The outburst during which the air is deflected by terrain;
- The cushion effect associated with rising air at the edges of the phenomenon.

When rapidly descending air arrives at the surface, its advancing edge spreads abruptly in all directions, the signature of a downburst. The air also effectively "splashes" back up toward the outside of the rain shaft. This accounts for the updraft phenomenon that usually precedes violent downdrafts as the air currents swirl and shift in the sky.

Downbursts are the progeny of thunderstorms and travel fairly quickly across the ground, so conditions can change in a few minutes. The winds may be erratic and almost unmanageable, shearing from head to tail winds in an instant, making it virtually impossible for a pilot to fly a consistent, stabilized approach.

The phenomenon poses the greatest risk during arrival and departure, and both have their respective problems. Entering a downburst during an approach has the disadvantage that the aircraft is being flown at a relatively slow speed and a reduced power setting with flaps, slats and gear hanging out, the highest possible drag configuration. Any severe wind shear has the immediate effect of setting up a major and often unrecoverable descent.

An aircraft encountering a downdraft during departure may be slightly better off because it's already operating at takeoff thrust and accelerating toward 250 knots. The only recovery necessary may be to continue cleaning up the wing and gear and to drop the nose to regain lost airspeed.

If you're approaching or departing from an airport on the worst possible angle, straight across the center of a downburst, the phenomenon can be insidious, imparting deceptively major updrafts initially. That's because the air curls back up on the outside of the funnel after impacting the ground.

The crash of Delta Flight 191 in Dallas back in August 1985 was especially notable because it demonstrated a textbook example of the worst-case scenario. The Lockheed L-1011 was on an ILS approach to DFW Runway 13L when

it encountered strong updrafts. The surprised copilot flying the approach responded by reducing power and pushing the nose over to stay on glideslope and airspeed, but the more experienced captain quickly recognized what was about to happen.

"You're gonna lose it all of a sudden... There it is," the captain shouted.
"Push it up, push it way up."

Simultaneously, the Lockheed emerged from the strong updrafts and flew into violent downdrafts. Airspeed sheared from 173 to 133 knots in a few seconds, and the L-1011 began plummeting toward Texas, descending at 5,000 fpm at one point. Even with full power, the big Lockheed slammed into the ground at 600 fpm and 200 knots, still a mile short of the runway. The airplane hit two, 4-million gallon water tanks and disintegrated, killing 137 passengers and crew, including all three pilots.

The tragedy of flight 191 did have one positive effect. Meteorologists Fujita and Byers were able to use the information on 191's digital data recorder and flight recorder to prove conclusively that the crash had been caused by a downburst.

As a partial result of so many accidents from a common cause, the FAA and airline industry began a program of training pilots to recognize the warning signs of downbursts and experimenting with cockpit systems to alert pilots of the danger. NASA also initiated efforts to come up with airport warning systems that could alert the tower when downburst conditions were present.

In fact, DFW already had a simple, anemometer-based, LLWAS (low-level wind shear alert) surface warning system in place when flight 191 went down, but the alarm didn't sound until three minutes after the crash. Since it's ground-based, LLWAS' universe of anemometers only detected wind irregularities at, or very near, ground level. In other words, it's reactive rather than predictive. An LLWAS can only advise when a downburst has already arrived, not when it's in the process of developing.

The avionics industry has experimented with a variety of downburst/wind shear cockpit-warning systems, using a variety of radar sensors. Doppler radar is one of the best. It's readily available on NEXRAD, technically known as WSR-88D, a feature of XM Weather. XM is also available through ADS-B In, and that's obviously the best and least expensive warning system.

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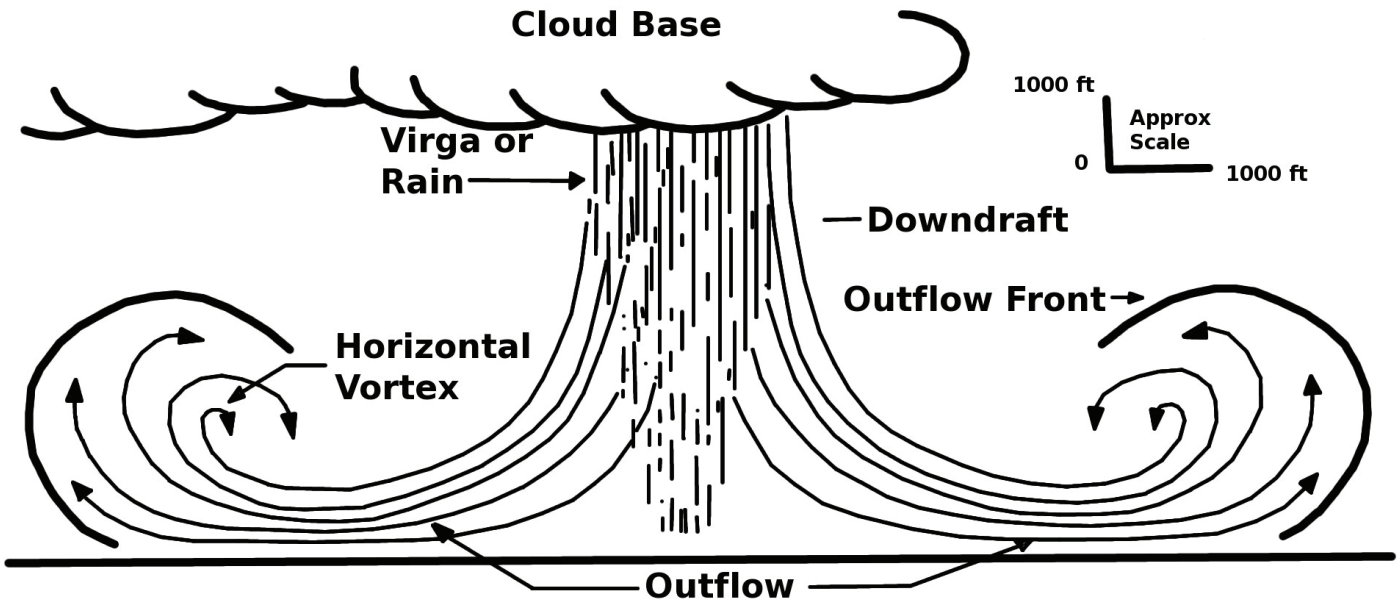
A number of other detection systems — microwave, laser, LIDAR (light detection and ranging) and infrared — all function in a similar manner, comparing updrafts and downdrafts near the aircraft to air movement out in front of the sensor. Some systems can "see" accurate air movements fairly far away and can provide up to 40 seconds warning of a potential downburst. Doppler is sometimes criticized for being less effective in dry weather as it was designed primarily to warn of precipitation. However, it does have a clear mode that can read vertical air currents in dry air.

Safe Flight Instruments of White Plains, N.Y., developed an early-detection device in the 1990s that Boeing installed on many of its aircraft and Cessna offered as an option on Citations. Though not exorbitantly priced ($10,000 to $13,000), those original downburst prediction systems haven't made serious inroads into the cockpits of modern aircraft.

In the corporate and airline world, more than 100 U.S. airports have been equipped with conventional LLWAS downburst-recognition systems, and at least another 45 have installed Doppler weather radars. Those systems have been perhaps the major reason for the near-eradication of downburst accidents. By definition, the most sophisticated downburst detection sensors are installed at major airline terminals. There's often little or no protection provided by tower operators at General Aviation fields.

Once again, despite the decline in accidents, none of the above is to suggest that downbursts are no longer a threat. No matter what you fly, pure jet or turboprop, it's unlikely you could outfly a fully developed downburst. If you're forewarned with ADS-B NEXRAD, however, you may be able to avoid the problem completely. TBM



(ABOVE) Storm from the Weather Underground

Weathering the Weather

Weather data all comes from the same place, but there are big differences in how it's presented and in what else the app does.

By Wayne Rash Jr.

The early months of 2015 saw some of the worst weather to hit the northeastern U.S. in decades. In some places, the primary weather worry wasn't whether you could fly, but whether you could even find your airplane under all that snow.

Because the weather was so extreme and changed so quickly, weather planning took on a whole new dimension. In addition to the normal weather concerns such as visibility, wind speed and precipitation, you had to figure the chances of your destination airport being open when you got there. Making sure you had the right weather data — and the means to display it in a way that was useful to you — became more important than usual.

Fortunately, plenty of weather applications are available for the iPad. Of course, not all of them are useful to pilots because they're designed for people with a casual interest in the weather. But some provide exactly the information pilots will want. Some offer very limited details and display it so that you can see it all at a glance. Other apps provide a wealth of information, but they're likely more useful in flight planning than in use in the cockpit halfway to your destination.

STORM

This new app by the Weather Underground replaces a longtime favorite, Intellicast HD, for the iPad. It includes the features of its predecessor and adds a number of improvements. Again, this isn't specifically designed for aviation, but it's a very capable weather radar app that uses high-resolution Dopplar radar data available from NOAA. In addition, this app can use data from non-airport weather sources including personal weather stations. I've found this app and its predecessor to be very useful for determining the timing of severe weather. So if you're sitting at the FBO waiting for the current storm to blow over, this will tell you when to expect it. The animated images of weather systems are very nicely done. Storm gives you a lot of additional features as well as the ability to display visual information in several ways with charts and tables. This is a very flexible app.

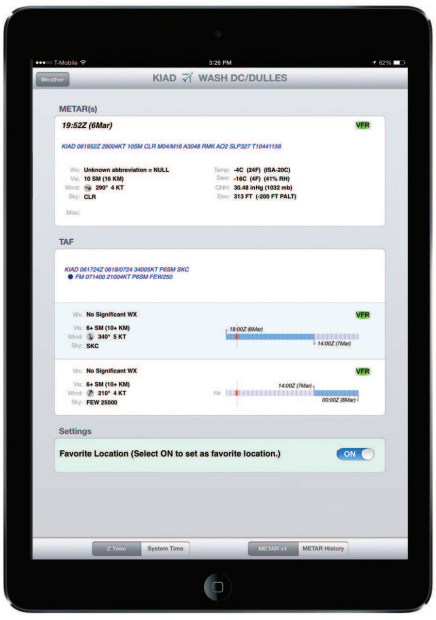
Fortunately, plenty of weather applications are available for the iPad. Of course, not all of them are useful to pilots because they're designed for people with a casual interest in the weather. But some provide exactly the information pilots will want.

AEROPLUS

This app aims to provide weather information for Europe as well as for airports in the U.S. and elsewhere worldwide. Compatible with both the iPad and iPhone, it supports in-app purchases of data from a variety of sources. The data in AeroPlus is presented in a unique way. Airports are shown as circles on a map of the area you're flying in and can be colored to show general conditions. Tap on the circle, and you'll get the name of the airport. Tap on the information icon with the name of the airport, and you'll get the detailed weather information. One interesting feature is an animated clouds diagram that shows cloud development over time at varying flight levels.

WORLD AVIATION WEATHER

This app exists for both the iPad and iPhone in slightly different forms. The iPad version displays the METARs and TAF for any airport you wish to see, and that means pretty much any airport out there.

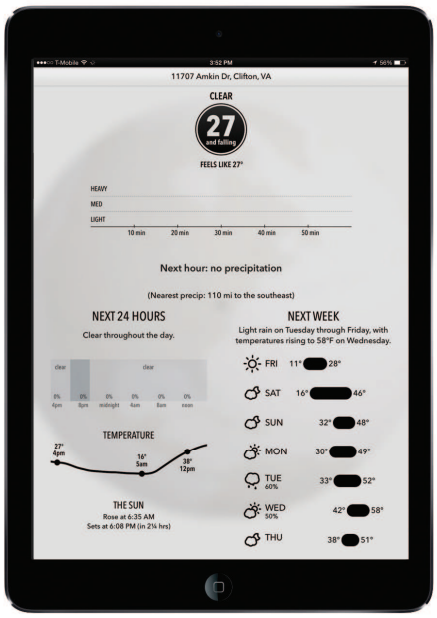


World Aviation Weather primary screen

The publisher says that it draws from a database of more than 7,000 airports. The primary screen is simply a display of the translated METAR and the TAF, for two times of day, translated and shown in graphical form. An iPhone version includes a link to Google Maps.

DARK SKY

This isn't exactly an aviation app, but it's still useful because it's designed to be what its developers say is "hyperlocal." This means it will tell you exactly what the weather is at a specific location, and exactly what it's expected to be on a minute-by-minute basis. The primary screen shows, at a glance, the current temperature, whether it's rising or falling, and what to expect in the next hour. It also forecasts weather for the remainder of the day and for the next week. Dark Sky has an animated map, which displays nice animations of the current weather, that's fun to play with.



Dark Sky showing specific local information

TAKEOFF HD

This could best be described as the Swiss Army Knife of weather apps. Takeoff HD focuses on the airports near you, wherever you happen to be at the moment. This app makes it easy to see current and forecast weather conditions while you're on the ground, but it will also show you the same thing while you're flying. You can also look at airports along your route. This app will show you METAR reports and, for favorite airports, you can see details about your preferred runways. You can see TAFs for every airport that has them, NOTAMs, winds aloft, AIRMETs, SIGMETs and PIREPs. This app will even show you satellite photos of the airports. Oh, and while you're at it, Takeoff HD will sync your settings with other devices, including your iPhone.

Takeoff HD showing airport weather details

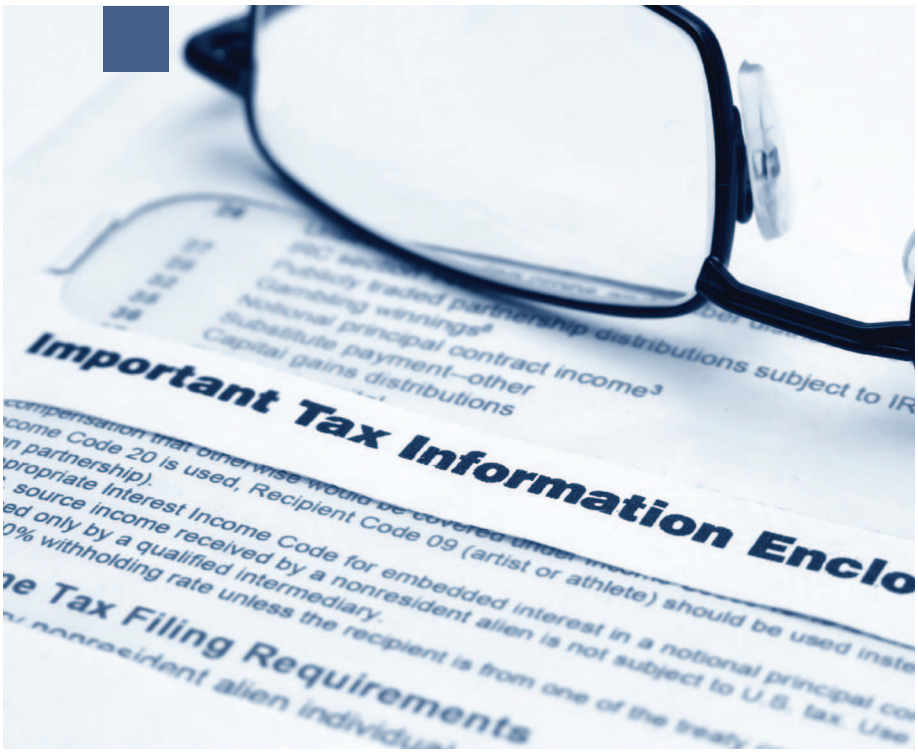
WEATHERMAP + AND WUNDERMAP

Both these apps give you weather maps and both show you the current and forecast weather over a large area. WeatherMap + offers minimum coverage over a fairly large region. When I was looking at the weather for IAD, for example, I also saw most of Virginia, Maryland, Delaware, Pennsylvania and part of New Jersey. Considering that weather is a regional phenomenon this makes sense but, if what you want is local weather, it's not as useful as WunderMap. The WunderMap app from the Weather Underground folks gives you a local display by default, but you can expand it as far as you like. Both apps let you select what sort of weather information you wish to see.

I'm sure that many of you are wondering why I didn't include the AirWX app that's probably the most complete app out there. In fact, AirWX has been so complete that it has even included approach plates and sectional charts. Right now, though, this app's developers say they're rewriting it and aren't providing any more updates to the app currently available. This means that a new version of AirWX is coming, and I'll take a look at it when it does.

This is by no means an exhaustive look at all weather apps that pilots are going to find useful, so I'll revisit this again, perhaps when AirWX arrives. Meanwhile, perhaps as a reward for spending so much time studying the weather, the conditions around Washington suddenly climbed above freezing and the snow stopped. This can't be a coincidence. TBM

Wayne Rash is based near Washington, D.C., where he works as bureau chief and senior columnist for eWEEK. He has been a pilot since 1968. He can be reached at wayne@waynerash.com



New IRS Regulations: Deductions available for 'Partial Dispositions'

By Jonathan Levy

Recent years have seen multiple rounds of new Department of Treasury regulations reshaping the landscape for treatment of repairs/improvements to all manner of tangible property, including aircraft. In September 2013, Treasury released long-expected final regulations governing what expenditures can be deducted as repairs in the year incurred, versus what must be depreciated over multiple years.

These were supplemented in late 2014 with a new rule for dispositions of property that allows, for the first time, taxpayers making improvements that involve the replacement, or disposal, of a portion of the pre-existing piece of property to take an immediate write-off of the tax basis of the part/s removed in connection with the improvement. This could apply to aircraft in innumerable situations: When a propeller is replaced, the remaining basis in the older propeller could be written off— as well as for engines, interiors or avionics suites. Note, however, that any value received for the disposed-of item (e.g., selling the replaced item for refurbishment) will need to be recognized and will diminish the tax advantage of the partial disposition.

CAPITALIZED "IMPROVEMENTS" VS. EXPENSED REPAIRS

Taxpayers applying the new regulations must evaluate any work done to determine whether it counts as an "improvement" (which must be placed on the books and depreciated) or a repair (which can be written-off in the current year as an expense). The first step in evaluating the improvement vs. repair question is to identify the applicable "unit of property." The regulations define the unit of property as including all components that are functionally interdependent in the sense that one component cannot be placed in service for its intended business function without placing the other components in service, as well.

According to this test, each aircraft is a "unit of property." As an example, neither an engine nor an avionics suite would be a unit of property, despite how valuable or complicated either may be. Nor could a fleet of aircraft be viewed as a single, collective unit of property. Each aircraft makes up one, and only one, unit of property.

Work performed on a unit of property constitutes an improvement that must be capitalized (rather than expensed) if the tax law considers it: (1) an adaptation to another use, (2) a betterment, or (3) a restoration.

Adaptations to new uses refer to cases where property is fitted to a use that is inconsistent with the use of the property at the time the taxpayer originally placed it in service. Examples would include converting an aircraft from passenger-carrying to cargo-carrying or converting either of those to an air ambulance. Upgrading a Part 91 aircraft to fly under Part 135 would ordinarily not qualify because, even after the upgrades, the aircraft would remain suitable for the prior Part 91 use.

A betterment has occurred if work is done that:
1. ameliorates a material condition or defect that predates the taxpayer's ownership of the property,
2. is for a material improvement to the property's capacity, or
3. is expected to materially improve the property's productivity, efficiency, strength, quality or output.

Work that involves replacing parts with improved, but comparable, parts is not a betterment if the taxpayer cannot practically replace with the same type of part (for example, because of technological advancements or product enhancements).

There are several ways that work may fall within the category of a restoration, but the one that is most relevant to aircraft involves "replacement of a part or a combination of parts that comprises a major component or substantial structural part" of the property. (Note: "addition," rather than "replacement," of a major component is also an improvement, but as a betterment, not a restoration. Repair, without replacement, of a major component is not necessarily a restoration.)

A "major component" is defined as "a part or combination of parts that performs a discrete and critical function." However, an "incidental component," even if it performs

a discrete and critical function will not, by itself, constitute a major component.

The regulations also contain a safe harbor providing that restoration-type improvements will not be found in routine maintenance for non-building property. Routine maintenance is defined as the recurring activities that a taxpayer expects to perform as a result of the taxpayer's use of the unit of property to keep it in its ordinary efficient operating condition, but only if, at the time the unit of property is placed in service by the taxpayer, the taxpayer reasonably expects to perform the activities more than once during the class life (six years for non-commercial aircraft, 12 for commercial).

PARTIAL DISPOSITIONS ASSOCIATED WITH IMPROVEMENTS

Partial dispositions commonly occur in aircraft in connection with major-component replacements (which may or may not also constitute betterments). Engines, propellers, interiors and avionics suites are all major components of aircraft that are regularly replaced, with significant tax consequences. Engines are a particularly good example of the sometimes arbitrary aspects of the new regulations. All aircraft engines undergo routine, but costly, overhauls from time to time. Most owners do not fly their aircraft enough for the overhauls to count as "routine maintenance." (They are not expected to be done more than once within the class life.)

At overhaul time, the engines are typically running fine, with no indication that they would encounter problems in the foreseeable future, and the overhauls being performed out of the abundant caution that characterizes the aviation industry. As a result of these facts, a strong case can be made that engine overhauls do not generally constitute "betterments." For some aircraft, an engine overhaul is done with the engine in-place on the aircraft; it is never removed. On larger aircraft, what is considered an overhaul may involve replacing the engine with a freshly overhauled, but otherwise identical, engine. In the latter case, a major component has been replaced, thus creating an improvement that must be capitalized, whereas in the former case the work can likely be currently expensed.

In the absence of the new disposition regulation, the replaced-engine case would require the cost of the overhaul to be depreciated, with no offset to recognize that something of value (the old engine) has been removed. Thankfully, the new partial-disposition rule provides relief from this unfortunate outcome. In a partial disposition, the taxpayer receives a write-off based on a portion of the total value of the property allocated to the item/s being disposed of, e.g., part of the total basis of the aircraft is allotted to the engine being removed. The taxpayer is allowed to use "any reasonable method" in making this allocation although the chosen method must be applied consistently. If the removal is associated with a major component replacement that is not also a betterment, a favorable, mechanical calculation is approved wherein the cost of doing the replacement is discounted based on the producer's price index to the date the replaced item was placed in service (typical at the aircraft purchase).

SPECIAL 2014 TAX OPPORTUNITY

In this transitional year of the new rules going into effect, a one-time, use-it-or-lose-it opportunity is available. As mentioned above, the new partial disposition rule provides a benefit that was not available under prior law: a write-off of the replaced component/s. This means that some taxpayers currently have on their books items which they are still depreciating that, if the new law had been in effect at the time, they would have had the opportunity to write-off as a disposition. The new regulations provide a one-time opportunity to declare a change in accounting method and write off these items in tax year 2014.

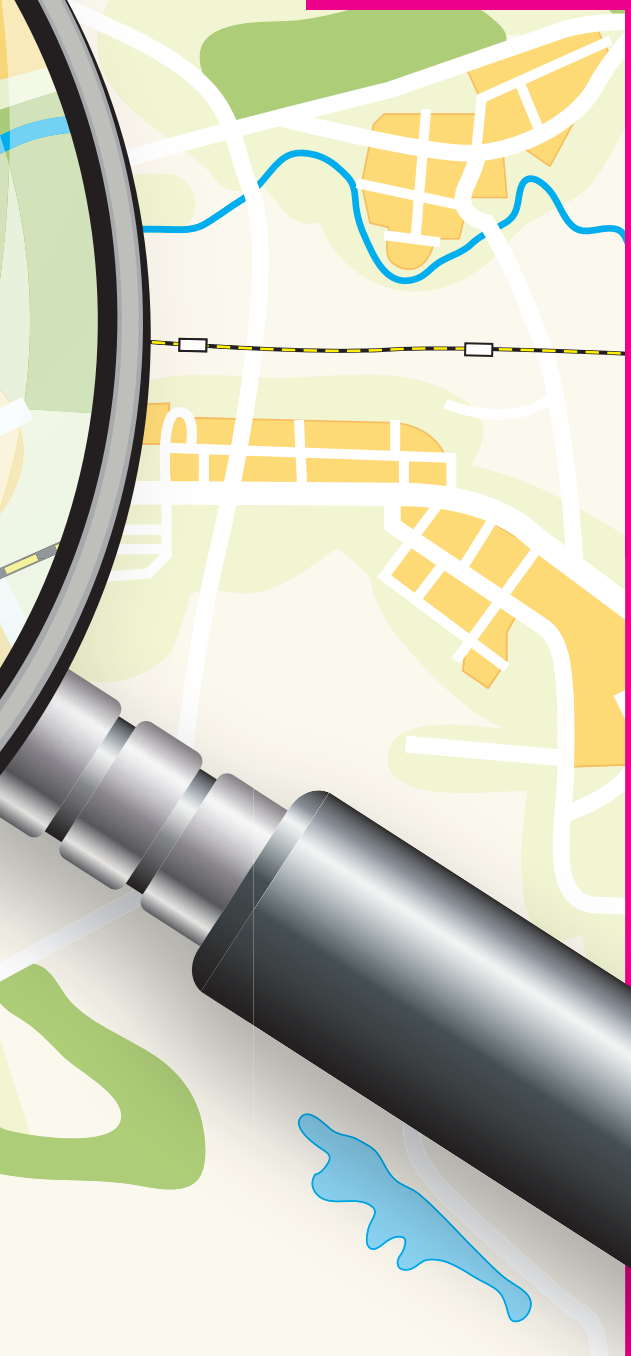
Some caution may be appropriate, however, in this regard. The special 2014 election requires taxpayers to prepare IRS Form 3115 and send it, in addition to attaching it to their returns, for special processing at an IRS facility in Ogden, Utah. The relatively short recovery periods already in place for aircraft mean that the time-value-of-money savings from current deduction rather than capitalization are often not great, which is a factor that should be weighed by taxpayers making election decisions as to the new partial-disposition rule. TBM

Jonathan Levy, Esq. is a partner in the Advocate Consulting Legal Group, PLLC, a law firm whose practice is limited to serving the needs of aircraft owners and operators relating to issues of income tax, sales tax, federal aviation regulations, and other related organizational and operational issues. This article represents a brief introduction to a complex topic. Always rely on a qualified professional's one-on-one consultation. We inform you that any tax advice contained in this communication (including any attachments) is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding penalties under tax laws, or (ii) promoting, marketing or recommending to another party any transaction or matter addressed herein.

MAGENTA-LINE THINKING

How many times do you just follow the course your GPS creates?

BY THOMAS P. TURNER



A friend of mine has a TBM 850. A few years ago he asked if I was going to be in Wichita and available to meet about a project we were working on together at the time. I said yes and, shortly afterward, we scheduled a day and time to get together.

He was still flying off insurance-required time with an instructor before he could be covered as pilot-in-command of the TBM. My friend and his instructor left California and planned to fly nonstop to Wichita. I watched the airplane on FlightAware.com and drove to the airport at what looked like a few minutes before they would land.

They were about 20 minutes later than I expected, descending out of a mid-level overcast for the visual straight-in approach. After shutting down, they took what seemed like an abnormal amount of time to exit the airplane and come in to the FBO. Both looked a bit disheveled.

Only later I learned why. It wasn't the fatigue from a nonstop flight halfway across the country. Before takeoff, they had made a nonstop flight to Kansas their objective. But they had wisely decided that they would evaluate their fuel state as they passed Pueblo, Colo., which was directly under their route of flight. If, at that point, they did not anticipate landing in Wichita with their planned fuel reserve, they would fuel up at Pueblo.

As they neared Pueblo, they checked, re-checked and (they later told me) re-re-checked their fuel and determined they could just make it with their planned 45-minute reserve. They pressed on toward Wichita.

A little east of Pueblo, however, ATC directed a descent to a much lower altitude for traffic. Suddenly the TBM's fuel consumption increased significantly. They flew on eastward for 150 miles, discussing their fuel state almost constantly. When controllers gave them a long vector for sequence on the approach into Wichita, they knew they would not have their expected reserves when they landed. And, because they were not headed directly from waypoint to waypoint, their fuel totalizer was unable to predict exactly how much fuel it would take to get to the airport. It was, I was later told, getting very tense in the cockpit.

After landing, the time spent before exiting the airplane was a mutual cool-down period while they gathered their wits and contemplated their luck in making it to the airport. Only when they saw the fuel bill for topping off the TBM's tanks were they able to figure they had less than 20 minutes of low-altitude cruise fuel remaining when they shut down. Had something required them to power up for a go-around, they might have exhausted all their fuel before they could set up to land again.

Magenta-line thinking is a mindset that all your options lay along the route you've set into your GPS or other navigation device. It's a risk management trap that causes many pilots to ignore other possibilities when conditions change and may require a diversion for weather, an aircraft abnormal condition or an emergency.

Was any regulation broken? No, unless you consider this reckless operation of an aircraft. The Federal Air Regulations concerning 45 minutes of fuel reserve for IFR flights is for preflight planning purposes only. Preflight calculations showed it could be done, and if they had not had to descend to the lower altitude 150 miles from Wichita and then been vectored

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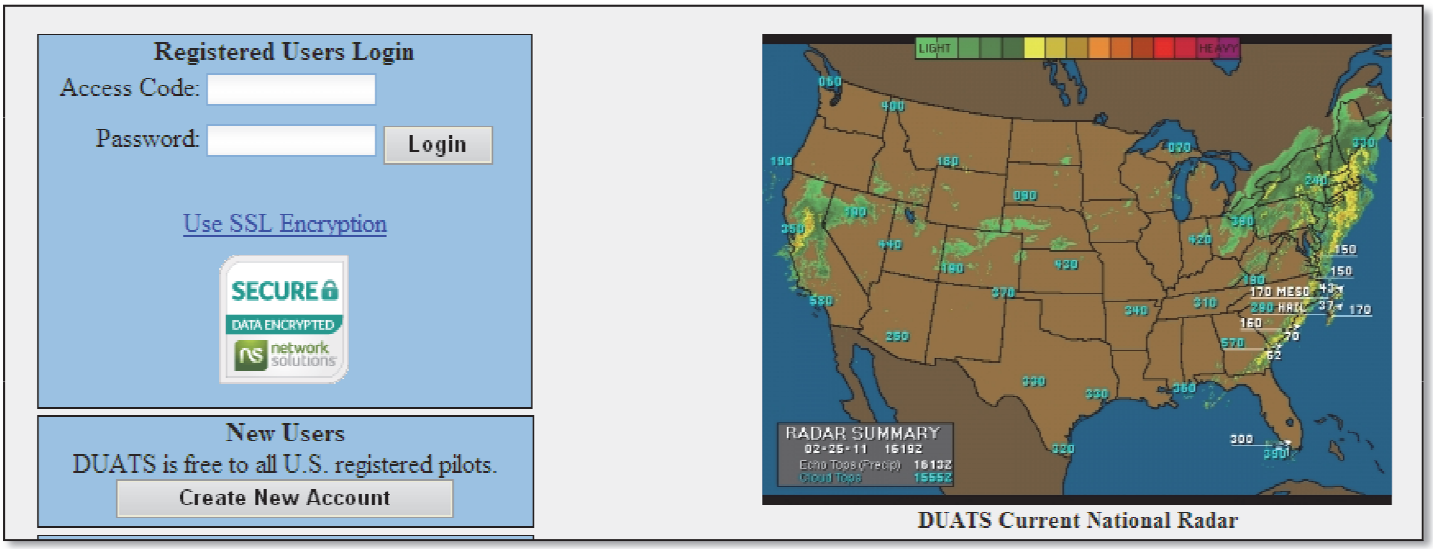

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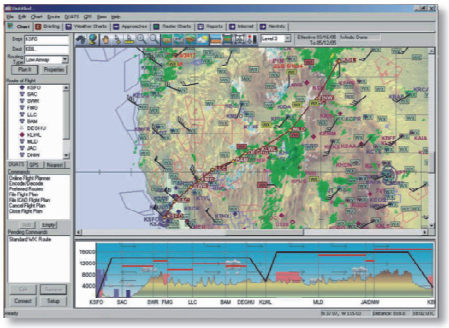

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wide for the approach, they would have had at least that much fuel remaining.

Was the flight safe? Business aviation safety researcher and lecturer Dr. Tony Kern tells us, "not having an accident does not imply the flight was conducted safety."

When my friend and his instructor independently told me about their experience and the horrible feeling of knowing they might have insufficient fuel to make it to Wichita, what struck me is that neither one of them had even considered anything but pressing on to Wichita. After they had checked their fuel state crossing Pueblo, they mentally checked the option of landing before Wichita off their list. As far as their decision-making process was going, they were going to land at Wichita or die trying. This is a prime example of what I call "magenta-line thinking."

IT'S A TRAP

Magenta-line thinking is a mindset that all your options lay along the route you've set into your GPS or other navigation device. It's a risk management trap that causes many pilots to ignore other possibilities when conditions change and may require a diversion for weather, an aircraft abnormal condition or an emergency.

Magenta-line thinking isn't new. In fact, I frequently saw pilots fall into the trap before General Aviation GPS existed, before we had magenta lines. For several years, I was a simulator instructor for a common make of single-pilot personal and business airplanes. In recurrent training, we presented a scenario that includes a roughly one-hour flight in IMC. I'd brief the pilot on the session the day before and provide printouts of a weather briefing to take back to the hotel so he or she could plan the simulated flight.

This was back in the days of "Weather by Fax," and using this service — where weather briefings were sent by fax machine on request of the pilot — was ubiquitous among my clients. Like much modern tablet computer-based briefing software, the weather information that resulted was for a path 25 miles either side of the pilot-defined route of flight unless the pilots asked for more information. Most pilots, in my experience, stuck with the default setting. So unless they asked otherwise, that's what I gave them.

Once in the simulator, I'd present a minor mechanic problem — primary alternator failure in the single-engine airplanes or a low oil pressure/high oil temperature condition in the twins. The briefed weather was circling minimums at the departure airport, with conditions worsening — only slightly better than minimums expected at destination at the time of arrival, and IMC along the entire route of flight. Over several years of presenting this scenario, I learned that pilots are almost certainly going to choose one of three options, most frequently in this order:

1. Continue to the planned destination, flying an approach to near-minimums. I recall about 90 percent of the pilots would "be a hero" and complete the flight as planned despite the circumstances.

2. Return to the departure airport, flying an approach to visual conditions a couple of hundred feet above minimums. This might be 7 percent or 8 percent of the pilots.

3. Attempt an approach at an airport almost directly beneath the airplane as soon as the abnormal checklist was compete. This entailed briefing and flying an unfamiliar non-precision approach into a non-towered airport under a stressful time crunch. Over the years, a very few of the pilots chose this option.

Regardless of the pilot's choice, the approach was flown with use of only part of the avionics and electrical equipment (single-engine airplanes) and on one engine after a precautionary shutdown in the twins. I recall a few times when a multi-engine pilot did not secure the engine pre-emptively, and I gave them a total engine failure during the instrument approach.

In four years of presenting that scenario, not one pilot got on the radio and asked ATC about weather conditions for airports not along the direct route of flight. If they'd only asked, I was ready to tell them of marginal VFR conditions at an ILS-equipped, 10,000-foot runway, tower-controlled airport about 40 miles off the cleared route. During debrief from the sim session, I'd highlight that option. Sure, some pilots considered their response an artifact of being in an artificial flight environment. Maybe so. Funny thing, though — in subsequent sessions, including pilots' future visits to the simulator center, they always asked ATC for help when I gave them any sort of problem en route.

MAKE A CHOICE

The proliferation of GPS moving map displays and weather-data uplinks should have given us unparalleled ability to detect and avoid hazards. Yet Controlled Flight Into Terrain (CFIT) continues to be high on accident-causation lists, a sure indicator pilots don't know where they are. And pilots like my friend and his instructor in the TBM tend to focus on a destination (perhaps with one decision point, in the case of Pueblo) and press on even when all indications are they should consider other options.

As my instructor colleague and prolific Designated Pilot Examiner Bob Gawler says, "Pilots know where they're going and when they'll get there, but they don't know where they are."

I've found this among my clients too. When I ask pilots where they are, they usually say, "52 miles from Wichita" or something similar. But they don't know what's around at the moment. A 2010 NTSB report on glass cockpit avionics in light airplanes concludes that although "accident pilots flying glass cockpit-equipped aircraft were found to have higher levels of pilot certification and more total flight experience than those flying conventional aircraft," there is a "higher fatal accident rate" in glass-cockpit airplanes and "introduction of glass cockpits has not resulted in a measurable improvement in safety."

GPS navigation should augment our flight planning by replacing old-school finger-on-the-chart estimations with precise location, direction and trend information. But I think, instead of continuing to study routes and options before a flight, the world of computer-based flight planning and inflight moving maps lulls many pilots into shortcutting the flight-planning process. Why waste time looking at charts, off-route weather and diversion options before taking off when you can push a couple of buttons and have a moving map, in-cockpit weather data and the "nearest airport" feature on your GPS?

I believe, in many cases, GPS has actually reduced situational awareness because pilots don't spend as much time looking at charts and planning a trip beforehand. They create a flight plan online and then just "fly the magenta line" from here to there. If you've ever been given a revised clearance to go direct to a fix, and you have no idea where it is, you've suffered at least a bit from magenta-line thinking.

If you bother to spend a little time preparing for your flight ahead of time, you'll have unparalleled situational awareness and know where you are at all times. But if you don't do your homework, you may be worse off in some situations than you were pre-GPS.

It's time to make a choice. Will you fall victim to magenta-line thinking? Or will you plan your flights, and then actually be safer for having these wonderful devices in your cockpit? TBM

WHEN LEATHER WENT TO WAR

The fightin' A-2

BY JAMES WYNBRANDT

World War II is acknowledged for its impact on the development of modern aviation. Less discussed but equally dramatic is the conflict's influence on contemporary flight-line fashion.

The leather jackets many of us don to strut around our airplanes are direct descendants of the legendary A-2 models that earned their wings in World War II. While aircraft have evolved markedly since those gallant years – new designs, new materials, new technologies – flight jackets remain proudly rooted in the past. Contemporary manufacturers battle each other with claims of authenticity for their A-2 reproductions while collectors scour flea markets and internet auction sites for originals. Even the Air Force embraces the retro movement; they recommissioned the A-2 in the '80s in an effort to rekindle the espirit de corps these garments evoke.


CVW
USS ENTERPRISE
CVAN-65
ATKRON 35
J. L. HOLLOWAY III
RADM U.S. NAVY
STINGERS
HATRON TWO
ATTACK SQUADRON 56
Tuskegee Airmen
Women Airforce Service Pilots
and B-17 Flying Fortress

When Leather Went to War

The ultimate fusion of function and fashion, the A-2 was to the Army Air Force wardrobe what the P-51 was to its arsenal. More cultural artifact than article of clothing, it shows up Zelig-like in films and photos, draped on the shoulders of aces and movie stars, always on the scene when history was being made. Yet the A-2 came from rather humble stock.

Early aviators looked dashing, despite their clothes, typically long leather coats and elbow-length gloves, motorcycle goggles and leather helmets. A long scarf wrapped about the face kept them from ingesting the castor oil lubricant that early engines slung back during flight. With the development of cleaner running engines, this cumbersome neckwear was replaced by the glamorous silk scarf, not as a fashion statement, but because pilots needed to be able to swivel their heads, looking for other aircraft, without chaffing their necks.

By the early teens, the first catalogs for flight accessories and clothing appeared, though the military lagged in developing adequate outerwear for its pilots. When the U.S. entered World War I, the Army had to turn to Britain, France and commercial manufacturers to secure suitable flight wear.

By the early 1920s, the Army Air Corps was making its own flight clothing and, with open-cockpit planes flying ever higher and faster, its pilots were using rudimentary heated and fur-lined flight suits. But for less extreme flying, military aviators needed a garment that was short, light and warm while providing protection and mobility in the cockpit.

The Army Air's uniform research specialists answered with the Type A-1 in 1925, "A" standing for summer weight. A sporty, buttoned-down olive-green lambskin jacket with a pair of patch pockets in front, a knit wool collar, cuffs and waistband, it was popular with Charles Lindbergh, Jimmy Doolittle and other aviators of the day. But by the time the A-1's design was standardized in 1927, it was becoming obsolete, thanks to improvements in the zipper, which was invented late in the previous century.

In 1931, the clothing branch of the Army Air Corps unveiled the "jacket, pilot's (summer)," designated Type A-2. The original design specifications called for a seal brown horsehide zippered jacket with a one-piece back, one-piece left and right front panels, two-piece sleeves, epaulets on the shoulders and a pair of patch pockets in front. Cuffs and waistband were of knit wool.

Some later A-2s were made of goatskin or cowhide. Referring to this garment as a "bomber" jacket, by the way, is a misnomer, and aficionados typically cringe when they hear the term used. The A-2 first saw combat in the skies over China with the American Volunteer Group (AVG), commonly called the Flying Tigers, though few pilots in this force had such jackets.

Originally restricted to use by officers, in 1940 the A-2 was approved for wear by all members of air crews, though not all wore them. For example, while the pilots and co-pilots of B-17s favored A-2s for flight wear (they had heaters in the cockpit to help keep them warm), waist gunners, whose stations were open to the elements early in the war, preferred the B-3 ("B" standing for winter weight). They were heavy shearling coats which also gained prominence in the air war. The elaborate artwork that adorns the backs of many original A-2s – which usually mirrored the nose art of the plane the owner flew – came into its own in the European Theater, most notably with the 8th Air Force. Commanding officers encouraged

their charges to decorate their aircraft and jackets, as much to take their minds off the horrendous losses its bombers suffered as to inspire camaraderie and crew cohesiveness. The practice quickly spread, with the art form reaching its zenith in the sophisticated – and sometimes pornographic – jacket and nose artwork created in the Pacific Theater.

The Navy developed its own flight jacket, which resembled an A-2 with a fur collar, using several model designations that culminated in the G-1 series, approved in 1947. However, Navy aviators never decorated their jackets as their brethren in the Army did. The G-1, in a much-modified form, is still standard in the Navy today.

Though A-2s remained in service throughout the war, Gen. H.H. "Hap" Arnold, who favored switching to a cloth shell model, pulled the plug on the jacket in 1942, ordering that no further contracts be signed. But A-2s remained in production into 1944. From the time they were approved for use in 1931, more than 40 manufacturers produced well over 500,000 A-2s, according to military historian Charles DiSipio.

Relatively few A-2s survived the war. The jackets were Army property, and pilots and flight crews turned them in at the end of their tours, after which the jackets were refurbished. In fact, our image of the classic A-2 is literally colored by this rehab process. The A-2s used in war movies and TV programs were invariably refurbished models, and the re-dying this entailed darkened the leather substantially. First-run jackets were much lighter in color.

Early aviators looked dashing, despite their clothes, typically long leather coats and elbow-length gloves, motorcycle goggles and leather helmets. A long scarf wrapped about the face kept them from ingesting the castor oil lubricant that early engines slung back during flight.

At the end of the war, an untold number were purposely destroyed, along with aircraft and other surplus, to keep military stockpiles from slowing conversion back to a civilian economy. Some aviators were able to keep their jackets, often by reporting them as stolen and paying the few dollars for a replacement. Yet for all the devotion garnered during their service, the A-2's wartime exploits were soon forgotten.

"I don't get the impression that every vet cared about his flying jacket," said DiSipio of History Preservation Associates. "More vets were interested in bringing home a trophy of the bad boy they defeated than what they wore to work every day."

Said Jeff Clyman, another aficionado and collector, "Most people either wore them around to paint their house, or just put it with their uniforms in a foot locker and put it in the attic along with everything else they brought back from the war."

It took a quarter century for the popularity of the A-2 to re-emerge. As interest in wartime memorabilia surged, they became collectibles. Clyman, the son of a WWII pilot and himself a warbird flyer on the air show circuit in the early '70s, used to wear his father's A-2 when he performed. People began to ask him where they could get a similar jacket. That led him to start his own company, Avirex, Ltd., which created a variety of reproductions of the A-2. In the mid '80s, when the Air Force was losing aviators to the airlines, the brass decided to bring back the A-2 as a way of forging greater loyalty and enhancing pilot retention. Avirex was involved in the project, helping design the specs for the new version of the jacket.

Nowadays, the A-2 and its knock-offs aren't as fashionable among the masses as when Top Gun was playing in the theaters (Tom Cruise, portraying a Navy pilot, wore a G-1, of course). Meanwhile, those who can't get enough of the originals can see the world's top collection at the U.S. Air Force Museum at Wright Patterson Field in Dayton, Ohio, visit a website (AcmeDepot.com) or a chat room devoted to the A-2, buy one from a collector (at prices ranging from $500-$4,000), or have one custom-made to original specs by any one of several manufacturers.

In vogue or out, those aware of the history of this glorious garment realize they will always be, in a very real sense, the height of fashion. TBM

Frederick "Fred" Samuel Loschs Flight Jacket

Lt. Harold W. Grays flight jacket 431st Fighter Squadron

A New Daher...

By Nicolas Chabbert, senior vice president, Daher-Socata airplane business unit

On Feb. 25, Patrick Daher, the chairman and chief executive officer of Daher, our parent company, held a press conference where he announced a new branding.

Daher had a turnover of more than $1 billion last year, and its order book represents approximately three-and-a-half years of turnover. In this total, the TBM saw its best year since the program's start 25 years ago, with 64 sales, and the second-best year in terms of deliveries. Patrick Daher was particularly proud of the TBM 900's successful launch, as it also was the first TBM model developed under the Daher flag.

Driven by bold innovation since it was founded in 1863, the Daher company today has established itself as one of the major players of what "think tanks" call the Third Industrial Revolution. The use of digital technology will permit a better integration of industry and services, thereby reducing industrial cycles, and costs. A good example is the 3D printing process that already is helping the company make prototype parts. In speaking with the media, Patrick Daher also confirmed his ambitions to develop the company in the American market for all its activities.

Today the most visible part of the ongoing change at Daher is the company logo, now applied to all entities of Daher, including the Airplane Business Unit, which is responsible for the TBM. This is a logical step, as Socata is now 100-percent owned by Daher, and the TBM is one of its leading products. However, the Socata company is not going to disappear. It remains, along with Morane-Saulnier, the successful and well-known predecessor brands on which Daher has based its aviation expertise.

Since the takeover of Morane-Saulnier in 1966, the Daher Airplane Business Unit continued its heritage trade of designing, manufacturing and servicing aircraft. Its success was transforming a company that had been a player in the military field since World War I into a General Aviation manufacturer, selling aircraft to civilian customers in 65 countries.

Driven by bold innovation since it was founded in 1863, the Daher company today has established itself as one of the major players of what "think tanks" call the Third Industrial Revolution. The use of digital technology will permit a better integration of industry and services, thereby reducing industrial cycles, and costs.

Among its achievements was the MS Rallye family of STOL training and touring airplanes, which is the most successful European light aircraft, with 3,300 built through 1994. The factory in Tarbes, France, also built 150 Gardan GY 80 and ST 10 touring aircraft with retractable landing gear, the predecessor to the TB Caribbean series, of which 2,154 were produced. Also contributing to the output were the 175 TB 30 Epsilon military trainers and, of course, the TBM, with 725 of these very fast turboprop aircraft built as of March 1. Altogether, Daher continues to service an active fleet of 3,000 aircraft.

The new Daher logo represents an endorsement of the TBM by a fast-growing company with steady ownership and large ambitions. Therefore, TBM can expect to receive the resources and support needed for future projects. And with the new impulse given by the company's top management, we are focused on our ambitions to establish the TBM as a market leader and to improve how we care for the customer.

One initial step is extending our level of service worldwide, and especially in North America. This is why we cut the ribbon for our new U.S. headquarters in Florida at Pompano Beach Airpark March 20. At this facility, we will offer more space to better serve our customers, with easier access and more facilities at the airport.

And if you fly, fly safely. TBM

TBM 900

I Love to Fly, Regardless

By Harry Daniels

What is your justification (if there is one) for the capital investment in owning your personal airplane? The income-tax savings for the business use of the plane will not absorb 100 percent of the investment and operating expenses. Flying the airlines will always be financially cheaper. But what about being able to get your job done and returning home in time to have dinner with your family? What is that worth? And doesn't that count as justification?

The drawback to commercial flying is that there are only 424 airports with a runway of more than 8,000 feet in the United States. This opens up 8.5 percent of the 5,054 U.S. airports with paved runways. This limits how close you can get to you ultimate destination.

Compare that to traveling by private plane. These planes are almost always smaller, meaning they can handle shorter runways. There are 2,249 paved runways in the U.S. with runways of 3,000 to 5,000 feet. That's 44 percent of the airports with paved runways in the U.S. Plus, there are an additional 903 airports with paved runways of less than 3,000 feet. Just make sure the runway is dry and you can hit the numbers. The odds are definitely in favor of getting closer to your destination by using a shorter runway. There are often smaller adjacent airports around major airports. Keep reading, and we will talk about that intangible.

An airplane is a business asset and a capital investment. How far is your usual distance? How many souls are usually on board? How fast do you need to get there? Once you have this figured out and have identified which airplanes will fill your needs, then comes the question of your budget and how deep your pockets are.

Several ownership options exist. There is a pure personal ownership. However, the personal liability issues of personal ownership make me extremely nervous. There are partnerships, limited liability companies and corporations. All four of these own-

ership options have tax advantages and disadvantages.

In your private plane, you will have traveled to your destination in probably a lot less total time, compared to commercial travel, especially if you are flying in one of the higher performance models. I call these the "go somewhere fast" planes. That has freed up several hours of your time and has made your day more productive. You have gained yourself a couple of extra hours off for personal time. Time and productivity gained is a nice intangible and a justification.

With ownership, you gain the advantage of travel entirely on your own terms. You arrive at the airport, start your airplane, taxi out and off you go to your job or work-site destination. And when you are finished, head home and arrive in time for dinner. That keeps the family happy. Another justification.

The downside for this level of convenience is the capital investment required for ownership. Another downside is that you are responsible for all of the carrying costs of airplane ownership. This includes hangar and storage, insurance and maintenance. With ownership, these costs show up every month. They are fixed. They are incurred regardless of how much or how little your plane is in the air.

Travel by private plane for business will also generate tax savings. But so will commercial flying. Business travel is tax deductible. I guarantee you there is no way the tax savings will offset 100 percent of the cost of ownership. The highest federal and state income tax rates right now will probably top out between 45 percent and 50 percent.

Aviation was saved by the bell in 2014 with the reinstatement of bonus depreciation and a very generous Section 179 depreciation deduction. At this time, these deductions are off the table or severely limited. We are back to a wait-and-see game to see how these deductions will play out for 2015.

That's the most you could save in taxes. So who do you think covers the other 50 percent to 55 percent of the investment and operating expenses? That's right – you do.

Aviation was saved by the bell in 2014 with the reinstatement of bonus depreciation and a very generous Section 179 depreciation deduction. At this time, these deductions are off the table or severely limited. We are back to a wait-and-see game to see how these deductions will play out for 2015.

Aviation has been a BIG winner as far as maintenance costs go, thanks to the changes and revisions to the tangible-property income-tax regulations. These revised regulations allow a lot of costs we previously had to capitalize now to be immediately tax deductible as a repair, maintenance or supply. These tax laws are here to stay for 2015 and going forward. Can you say justification?

Go back to the intangible of time and convenience. If you are able to save a significant sum of money in taxes over the life of the plane and if you are able to gain efficiencies in productivity and additional profits, travel by private airplane may be a very wise use of your financial resources. I hear justification.

I have a saying that has always been good to me. Don't let income taxes dictate a business decision. Run your business first and then, if there is any tax windfall, well, that's icing on the cake. However, if there are tax dollars on the table, grab every one of them. Frankly, I just love to fly, regardless. And that is the biggest justification. TBM

O. H. "Harry" Daniels Jr. is a CPA, a CFP certificant and a certified valuation analyst. He is a partner with the firm of Duggan, Joiner & Co., Certified Public Accountants, and can be reached at 334 N.W. 3rd Ave., Ocala, FL 34479, telephone 352-732-0171, fax 352-816-1370, email OHD@DJCoCPA.COM. Harry has held his license as a private pilot since 1991. This article is available for reprint upon request.

What's Your Story?

Can you explain a maintenance process ?
Have you traveled somewhere in your TBM worth recommending ?
Did you learn a valuable lesson while flying your TBM ?

We are looking for articles for this magazine! Do you have a story about flying your TBM? How about new tips and techniques for fellow TBM owners? Maybe you can explain a maintenance process you find valuable. We want articles for TBM owners, by TBM owners and service experts!

If you have an interesting story, we are asking for you to share it with us. Articles should be 300-500 words. Accompanying photos must be 300 dpi.

Email all submissions to Lyn Freeman, lyn@lynfreeman.com for approval.

WEEKENDERS

SPRING 2015

READY FOR AN ALLIGATOR IN THE ALLEGHENIES?

BY MICHELLE CARTER

It's hard to choose where to go first when you fly into Nemacolin Woodlands Resort in the Alleghenies of southwestern Pennsylvania.

You could head to the Woodlands Auto Toy Store to ogle (and perhaps bid on) the 1936 Cord 810 Phaeton or the 1950 Capt. America Harley, signed by Peter Fonda. But then late actor Steve McQueen's 1931 Pitcairn PA-8 is up at the Pride and Joy Airplane Museum, sharing space with a de Haviland Moth Minor.

Perhaps your tastes run to fine art. The art collection of Nemacolin founder, Joseph A. Hardy III, which is spread all over the 2,000-acre resort, includes originals by Toulouse-Lautrec, Calder, Remington, Tiffany and Audubon. If you're inspired to pick up some of your own, the Nemacolin Galleries spotlight the works of emerging artists at Meet the Artist events.

The Wildlife Academy is beckoning as well. It's dedicated to providing interactive entertainment and live-animal programs with an emphasis on education. You can share some space with zebra, lions, wolves, leopards, two-toed sloths, an alligator, snapping turtles and a white tiger! You can see them all on Louie's Africa Train Ride or the Safari Tour.

Nemacolin shows itself off particularly well in the winter when snow covers the championship Mystic Rock Golf Course. Now those manicured, PGA-approved greens take on a new life as trails for snowshoeing, cross-country skiing and dog-sledding. Downhill skiing and snowboarding are available on the seven slopes and 25 acres of Mystic Mountain, which is totally illuminated for night use.

When the snow recedes, the Field Club offers a 140-acre complex for clay-shooting enthusiasts and the Orvis® Endorsed Fly Fishing Lodge where anglers of all abilities can choose from trout streams including the Youghiogheny River, a waterway that flows north from Maryland and into the Monongahela just before it joins with the Allegheny to form the Ohio River. A number of smaller creeks provide the shallows that browns, brookies and rainbow trout prefer.

But the biggest attraction for private pilots is the resort's private airfield (PA88) in Farmington, 62 miles southeast of Pittsburgh. The 3,980-foot runway is paved and well-maintained, but the airport has no fuel or ground services so you'll need to plan ahead. Operations are limited to day-time arrivals and departures. Contact resort security at 800.422.2736 or 724.329.6121 or by email at security@nemacolin.com 48 hours before you plan to arrive. A call the day before will provide an update on weather and NOTAMs.

IF YOU GO…

NEMACOLIN WOODLANDS RESORT
1001 Lafayette Drive
Farmington PA 15437
724.329.8555
Nemacolin.com

NEMACOLIN AIRPORT (PA88)
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FLY IN, STEP BACK, AND ENJOY THE NORTHERN CALIFORNIA COAST

BY MICHELLE CARTER

Few spots on earth are as instantly recognizable as the Northern California coast at Mendocino County where eons of pounding surf, sun and wind have carved a unique architecture of natural bridges, tunnels, coves and inlets.

Inns are situated above the cliffs with Adirondack chairs set up to take in the spectacular sunsets (with a glass of Anderson Valley wine), and the constant rhythm of the surf to lull you to sleep. It's a get-away paradise, and you fly right into the heart of it all at the Little River Airport (KLLR).

The airport, which served as an outlying field to the Naval Auxiliary Air Station at Santa Rosa, Calif., in the '40s, offers a paved 5,249-foot runway on a coastal plateau. Click your mic three times for AWOS, and that's about it for amenities. Enterprise Rent-a-Car in Fort Bragg 30 miles north will arrange delivery and drop-off of a rental car if you like.

But you don't need one. The elegant McCallum House in the town of Mendocino (the actual setting for the fictional Cabot Cove of "Murder, She Wrote" fame) will be happy to send a car for you if you let them know when to expect you. Then you can explore the bluffs and watch for whales, enjoy great meals and sip Mendocino County wines without the hassle of a car.

Should you hanker for an even slower pace, consider venturing 15 miles south of Little River to the tiny hamlet of Elk, which once housed the bustling Goodyear Redwood Lumber Mill. The (occasionally open) Greenwood Museum on the bluffs above Greenwood Creek Beach, the site of the once-thriving sawmill, tells the story of the clipper ships that sailed into the deep cove and loaded finished lumber and off-loaded passengers by means of a high-line rigged across five tiny islands to the headland.

The remnants of that line and the cove beneath it provide the spectacular view of the Sandpiper House Inn in Elk. The surf surges through a blow-hole in the wall of St. Anthony's Point below, and hawks and an occasional eagle soar on the thermals while you sit and watch.

Stroll into town for dinner at Bridget's or just make a meal of the hors d'oeuvres and wine that the innkeepers set out in front of the fireplace in the craftsman-style living room. For exercise after the bounteous breakfast, walk down to Greenwood Creek Beach and imagine the mouth of the creek with redwood logs packed end-to-end and destined to meet the construction demands in San Francisco, which was rebuilding after the Great Earthquake and Fire of 1906.

And you don't need a car here either. When you call to make reservations, tell the innkeeper you will be flying in to Little River and they'll be there to meet you.

If Little River is weathered-out, another option is to fly into Ukiah (KUKI) about 30 miles inland. Ukiah's almost always sunny and Hertz will deliver a car to the airport. Then you can drive through some of the most spectacular redwood forests on your way to the coast.

And did I mention the wineries of Anderson Valley, which flank Highway 128 and the Navarro River. You can sample your way to Elk and/or Mendocino and then buy your cases on the way back.

IF YOU GO…

LITTLE RIVER AIRPORT (KLLR)
43001 Little River-Airport Road
Little River CA 95456
707.463.4363

ENTERPRISE RENT-A-CAR
200 E. Chestnut St.
Fort Bragg CA 95437
707.202.5048

UKIAH MUNICIPAL AIRPORT (KUKI)
Ukiah CA 95482
707.467.2817

HERTZ RENT-A-CAR
100 W. Lake Mendocino Dr.
Ukiah CA 95482
707.468.0537
Hertz.com

SANDPIPER HOUSE INN
P.O. Box 189
5520 S. Highway 1
Elk CA 94532
800.894.9016
SandpiperHouse.com

MACCALLUM HOUSE
P.O. Box 206
45020 Albion St.
Mendocino CA 95460
800.609.0492
MacCallumHouse.com

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HEAD SOUTH — BUT STILL NORTH OF THE BORDER THIS WINTER

BY MICHELLE CARTER

Itching to fly some place warm for some golf this winter — without the hassle of eAPIS or Customs? Reserve your stay at Lajitas Golf Resort and Spa on the Rio Grande River in Texas, and you can land at the resort's private airport. They'll pick you up and deliver you to your room!

Set between Big Bend National Park and Big Bend Ranch State Park, the 27,000 acres of Lajitas offer some of the most spectacular high-desert landscape in the vast curve of the Rio Grande in remote southwest Texas — and a world-class 18-hole golf course, Black Jack's Crossing, designed by PGA Hall of Fame golfer, Lanny Wadkins.

If shooting piques your interest, Lajitas lives up to its Wild West image. Five Stand Sporting Clay Shoot allows shooters of all abilities some exciting target combinations. Then you can get into the "wannabe" action, if you like, with a Cowboy Action Shoot (with a single-action pistol, a side-by-side shot-gun, and a lever-action rifle) or a Combat Course, using an AR-15, a 9 mm pistol, and a pump-action shotgun.

Spend a few hours at the Equestrian Center and you may never get your golf clubs out of the plane. Pick out a pony that matches your skill set, and you can take riding lessons or head out on hour-long, half-day and full-day trail rides that cross Comanche Creek and provide breath-taking views of Mesa de Anguila, Lajitas Mesa and Mexico.

Cap your riding adventure with the Buena Suerte Overnight, a ride out to the historic Fresno Mine and the ghost town of Buena Suerte. Cowboy cooks will prepare a world-class campfire dinner and a hot breakfast after a night under the stars.

And, of course, there's the Agave Spa with a full range of services, including facials and body treatments using herbal ingredients and stones native to the Big Bend Region.

On the site of Black Jack's Crossing is the Yates Longhorn Museum which honors the legacy of the Texas Longhorn, one of the most recognizable icons of the American West, and the cowboys who moved them along on trail drives throughout the 19th Century.

The unique Lajitas setting may inspire you to catch a ride to Big Bend National Park where you can access the Rio Grande. Five spectacular river canyons in Big Bend offer opportunities to kayak, canoe or raft. River tours and equipment can be reserved from the park website, along with organized groups and bus tours for bird watchers and others who are curious about the intriguing natural and human history of the Big Bend.

The airport itself features a 6,000-foot runway, full 100LL and Jet A fuel and complimentary tie-down services. The airport complex is designed to accommodate a wide range of aircraft.

Landing reservations for the airport must be made at least 72 hours in advance. Call Airport Manager Clayton Choate at 432.424.5000 to arrange your arrival and ground transportation. To ease your mind, know that the Brewster County Sheriff barracks is located on the airport property for added security.

IF YOU GO…

LAJITAS GOLF
Resort and Spa
HC 70, Box 400
Lajitas, TX 79852
432.424.5000
LajitasGolfResort.com

LAJITAS INTERNATIONAL AIRPORT (89TE)
HC 70 BOX 400
Lajitas, TX 79852
432.424.5000
Big Bend National Park
VisitBigBend.com

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