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TWIN & TURBINE

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

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BREAKING THE ICE

ICING TALES AND TAKEAWAYS

Contents

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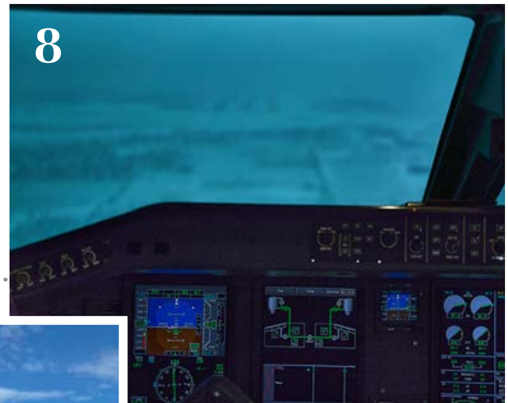

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Editor's Briefing

by **Rebecca Groom**

Annual Assurance

The following editorial is guest written by Jared Jacobs (jaredjacobs2@gmail.com).

As a follow-up to last month's editor's briefing ("Annual Anxiety"), I can now happily report 1RW is back to airworthy status. After a few weeks of scrutiny under the keen eyes of mechanics and inspectors, our F33A Bonanza has been issued a clean bill of health. And though some of my anxiety wasn't entirely unwarranted, I am now clear of the rite of passage that is an aircraft's first annual.

To start with the good news, 1RW continues to impress anyone that works on it. The baseline inspections all confirmed that the 1970 Beechcraft Bonanza is in great shape. The one cylinder we'd been monitoring following some maintenance over the summer rebounded nicely and settled in. All cylinders are now running with compressions over 70 psi. A few AD's required inspections but thankfully revealed no defects.

Then came the electrical issues. After some digging, it was determined that the alternator was 20 years old with nearly 1,400 hours in service. The mechanics explained this type of alternator had a gear-driven solid drive shaft linked to major issues in the past. If the alternator suffered a bearing failure, the resulting metal could end up in the engine oil, resulting in a required teardown, or worse, engine failure. At the mechanics' suggestion, we sent the alternator for overhaul, plus opted to install an elastomer drive coupling that would prevent an alternator failure causing a subsequent engine failure. Beyond the alternator, it seems that the weeks of extreme cold last winter (before we were able to secure an engine compartment heater and battery tender) did a number on our battery. It failed its required 80 percent capacity check – a new battery was needed. These two line items alone equated close to the cost of the standard annual inspection.

At first, when hearing the alternator needed service, combined with the news that previous mechanics potentially omitted an AD, I became frustrated these items hadn't been identified in the pre-buy inspection. If you recall in the last article, I discussed concern whether I made a mistake by not conducting an annual at the time of the pre-buy. In hindsight, I'm not sure it would have mattered much. While the items might have been caught in a more thorough inspection, we still would have been satisfied enough with the findings to proceed with the purchase. Moreover, convincing the previous owner to split the cost of the alternator overhaul with no real indication of it being in distress would have been a tough ask in the seller's market that we were buying in.

I also want to note I am happy we decided to take the aircraft to a different shop for the annual than we used for the pre-buy. Not because there were issues in work completed by the first shop, but because additional sets of experienced eyes thoroughly going over our Bo only increases the chances nothing falls through the cracks. I know there can be a real benefit to an A&P and aircraft having a history together, but I would argue occasionally shaking up your maintenance routine could be useful. And one advantage of being based in the "Air Capital" is that there is no shortage of exemplary A&P's.

Another discovered benefit of conducting the annual at this point in our ownership (eight months in) was we were able to develop a list of minor squawks to address: an intermittent nose gear indicator light; a main landing gear door gasket that had come loose; an adjustment to the takeoff fuel flow to improve engine cooling. And the most interesting one, which was noticed during a photo-shoot flight (see article image), was a right main landing gear door not fully closing. While the aircraft was on jacks doing gear swings in the shop, the mechanic observed a pop rivet on the inboard gear door that was working its way out and slightly jamming the door. The rivet was removed and replaced.

At the heart of my writing in last month's editor's briefing, I planned to measure the success of our annual inversely against its overall cost. Basically, the cheaper the annual, the better the result. I have to admit now I think that was a flawed premise to take. As with every aspect of aircraft ownership so far, my view at the beginning of each event differs greatly from the perspective I find on the other side.

The reason behind an annual inspection is safety, not cost savings. Of course, my co-owners and I would have loved to come out of the annual with a smaller bill to pay, but as the adage goes, you can't put a price on safety. And following the sit down with the chief inspector responsible for the sign-off in our aircraft logs, I gained a much greater understanding of our Bonanza. Question marks and squawks lingering in my mind over the last eight months of getting to know 1RW are now answered and remedied. I also noticed a difference the next time I walked out to the airplane, closed the door and started the engine. I had further confidence in the machine than I had felt before. It is hard to put a price on that feeling. T&T

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by Dianne White

Winter Flying

Ready or Not, It's Almost Here

With the onset of winter, as pilots, we must shift our flight planning and weather analysis from assessing convective threats to icing and cold-weather hazards such as icing, frozen precipitation and fast-moving cold fronts. Going into the colder months, we need to have a strategy for gathering and understanding all the weather data to make sound go/no-go decisions during the winter.

Where to start: First take a look at the big picture, what meteorologists call the synoptic situation. The latest surface analysis, prog charts and significant weather outlooks will give you a pretty good idea of what's happening in terms of major weather systems affecting your route. Airmets are also good products to review as they advise of weather that may be hazardous – other than convective activity – to light aircraft, as well as larger planes. Airmets are typically issued for conditions that are widespread, meaning it covers at least 3,000 square miles, and are issued in six-hour periods.

As a quick review, airmet components consist of instrument meteorological conditions (Airmet Sierra), turbulence (Airmet Tango) and icing (Airmet Zulu). Gone are the days of trying to decipher and visualize long airmet codes. Today, with a few clicks, we can view a graphical representation of airmets.

Cold fronts, especially fast-moving ones, often trigger convective activity as colder air overtakes and plows under warmer air. In the wintertime, our concern with convective activity is its ability to lift substantial amounts of moisture to altitudes where the temperature is below freezing. The cloud droplets are cooled to temperatures below 0 degrees Celsius and yet can remain, for a time at least, in this liquid form.

Warm fronts, defined as warmer air overtaking and being gradually lifted up and over colder air at the surface, often have a more limited vertical extent than those associated with cold fronts. However, the area over which the clouds spread is often greater, which can spread low ceilings and limited visibility over a similarly larger number of potential destinations and alternate airports under consideration for our planned trip.

The most serious possibility that warm fronts present is freezing rain or freezing drizzle. Rain forming in the clouds in the overrunning warm air falls through colder air below the frontal surface. If the temperature of this air is less than 0 degrees C, the raindrops will initially be supercooled. Ultimately, given enough time and distance of fall, something will trigger the freezing process in these raindrops. The greatest potential hazard from this warm-front situation arises when the falling supercooled raindrop encounters some object, like our airplane (also cooled by passage through the subfreezing air to a temperature of less than 0 degrees C), which triggers the freezing process. The result is often a rapid, large buildup of clear ice.

Thankfully, we've got some excellent tools for pre-flight planning. The Current Icing Potential (CIP) is an online display of high-precision maps and is updated hourly. It identifies areas of potential aircraft icing produced by cloud droplets, freezing rain and drizzle. The Forecast Icing Potential (FIP) tool depicts icing hazards up to 12 hours in advance. It provides color-coded maps of icing potential from altitudes of 1,000 to FL290 MSL.

In ForeFlight, there is a robust suite of icing products (including CIP & FIP) that allow you to view the forecast for the severity probability of ice and the lowest freezing level. You can also find these depictions on the FAA ADDS website.

Once we have the big picture, we will want to start looking at specifics of the reported and forecast conditions at our departure, destination and alternate airports. En route surface reports may also provide insight into whether a front or pressure system is behaving as predicted. Pilot reports near our departure airport can be valuable data for our decision-making process. As long as the PIREPs are current and in a relevant position, they can provide a glimpse of conditions as they existed at the time of the report, especially cloud bases and tops and any ice encountered.

You are probably familiar with a forecasting product called Model Output Statistics (MOS) forecast alongside the traditional TAF. As the name implies, MOS is derived from weather forecasting models, including the NAM (North American Mesoscale) and GFS (Global Forecast System.) MOS takes the long- and short-range model guidance and attempts to produce an objective and more useful site-specific forecast. MOS is used by forecasters at the NWS to help generate TAFs but is never used solely for constructing the TAF.

MOS does have limitations. It cannot "fix" a bad or faulty model forecast. If you use MOS, verify against METARs, satellite and radar data to ensure the MOS guidance appears on track. Also, MOS tends to be less accurate for extended forecasts. In fact, a MOS forecast beyond 72 hours isn't much better than using climatology averages. Finally, MOS is not good at predicting extreme conditions. All that said, MOS is best used for tracking trends.

Once you've gathered all the pertinent weather information, consider these questions:

1) Where are the fronts moving relative to your departure, route and destination?
2) Where are the cloud tops? If you can get on top, will you be able to stay on top?
3) What are the cloud bases along your entire route?
4) Where is the warm air?
5) Are the surface winds within my personal minimums?
6) When is sunrise and sunset? Short winter days may mean some flights may push into darkness, which brings its own hazards. (You're night current, yes?)
7) What are the runway surface conditions like? Pick up the phone and call the destination FBO who has eyes outside.
8) Is every system on your aircraft operational, such as prop heat, pitot heat, windshield defroster, anti-ice systems, lights, etc.? Check functionality prior to launching.
9) Do I have plenty of fuel? Plan conservatively, especially in winter when winds can be stronger than forecast.
10) What's your out? Regardless of your experience, recent IFR time and equipment, never leave yourself without an out. What if conditions rapidly deteriorate? What if you have an unexpected mechanical issue? Always plan out your alternate courses of action, even if it means you return to better weather conditions behind you.

For more great information on icing and cold weather ops, check out AOPA's excellent content: *www.aopa.org/Pilot-Resources/Air-Safety-Institute/Safety-Spotlights/Icing-and-Cold-Weather-Ops*.

Tribute to My Friend Kevin Dingman

If you are a longtime *Twin & Turbine* reader, you most likely have enjoyed reading "From the Flight Deck," one of the longest-running columns to be continually published in any monthly aviation magazine. Kevin Dingman has served up wit, sage advice and a clever turn of phrase to the T&T family for more than a decade.

In the summer of 2010, as the *Twin & Turbine* editor-in-chief, I received an email from a reader detailing his harrowing experience of an MD-80 engine failure during takeoff from Miami International. Intrigued, I called him, and after a short conversation, I insisted he write an article about it as there were several great lessons he imparted. I also quickly caught onto his hilariously dry sense of humor and how he used it effectively in his storytelling.

Kevin at first demurred, saying he wasn't a professional writer, but eventually he agreed to give it a go. That article became the genesis for a regular column. Since then, I don't believe Kevin has ever missed a deadline.

Congratulations to my friend and T&T contributor Kevin Dingman.

If you've read Kevin's work through the years, you know how much flying is a part of his being. A former F-16 pilot and Air Force veteran, flying has defined his professional legacy but is also deeply personal to him. Planes are more than machines; they have the ability to invoke great joy, angst, frustration and nostalgia. (Remember his article on anthropomorphism?). He once wrote, "Every plane is deserving of our appreciation and respect. It's something we have to remember when talking about our planes to others. I try to start off with several compliments about someone's aerospace vehicle before I list the things about mine of which I'm proud."

In 2016, he volunteered to ferry American Airlines' last MD-80 to the Roswell, New Mexico boneyard. CNN documented the flight (which you can still find with a quick Google search) and captured Kevin's emotional farewell to an airplane as it reached its final resting place. If you know Kevin, you know how much he loves the Mad Dog.

Fast-forward to the summer of 2021: Kevin sent me a short note announcing his last flight as captain at American Airlines. He was honored with a water cannon salute as he taxied an AA Boeing 737-800NG (featuring the airline's "legacy" tail insignia) to the gate for the final time.

Congrats Kevin, on your retirement and all that you've accomplished. Keep flying that Duke and writing nuggets like this: "We've all tasted flight, and someday you will 'walk the earth with your eyes turned skywards, for there you have been and there you will long to return' (da Vinci)." Still though, for now, "We're still flying, and that's enough."

Dianne White *is the executive director of MMOPA and editor of MMOPA Magazine. For a total of 14 years, she was editor of Twin & Turbine and has worked in the business aviation industry for nearly 30 years. She also serves on the board of directors for Angel Flight Central. An active multi-engine, instrument-rated pilot, Dianne lives in the Kansas City area and can be reached at* **editor@diannewhite.com.**


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IMPENITENT ICE

by **Stan Dunn**

On October 16, 1972, Congressional Leader Hale Boggs of Louisiana and Congressman Nick Begich of Alaska mysteriously disappeared on a charter flight between Anchorage and Juneau. The search for Boggs and Begich was expansive, involving 90 aircraft dispatched on 1,000 flights. The search area encompassed 326,000 miles of Alaskan wilderness. President Nixon instructed the Air Force to include the powerful SR-71 in the search. The Mach 3 Blackbird is capable of cranking through 10,500 feet of high-resolution film in a single sortie. From 80,000 feet, it can cover a great deal of real estate in a short period. None of it was enough to discover the final resting place of the Cessna.

Early in his political career, Hale Boggs had participated in the Warren Commission inquiry into the assassination of JFK. After his death, there was idle speculation that he had been killed by the mafia over his opposition to the single shooter theory. Nick Begich's widow, Peggie, added fire to the mob motif when she quickly wed a leg breaker named Jerry Pasley. Pasley was a bartender from Tucson who had links to a semi-retired mob boss named Joe Bonanno. Peggie and Jerry's courtship took a couple of months. The marriage lasted a little bit longer. By 1994, Peggie had long moved on and Jerry Pasley was in jail for murder.

A couple years into a life sentence, Pasley reached out to the FBI looking for a deal. He claimed that Peggie had met covertly with Joe Bonanno a month prior to her husband's disappearance. Pasley also asserted that he had delivered a package to Alaska "the size of a bomb" on behalf of Bonnano. He surmised that Peggie had wanted Nick Begich killed in order to collect on a large insurance policy. He scurrilously claimed that Peggie had been involved in several affairs prior to Begich's death.

Under questioning, Pasley had no answer for how Peggie would have gotten mixed up with Joe Bonanno. Neither could Pasley explain how the mob would have known to go after N1812H (the accident aircraft). The charter had been a last-minute affair. Nick Begich himself had not known the tail number prior to the flight. Pasley had the hallmark of a lifer trying to con his way into a reduced sentence. He had eight felony convictions, including two each for murder, kidnapping and aggravated assault. He was not a credible source. His babble was duly recorded and cataloged for the conspiracy theorists.

Though the specifics may vary, components protected against ice are generally uniform across different aircraft types.

In the event of equipment failure, do not fear. Maintain sufficient airspeed and establish an exit strategy.

From Implausible to Probable

In aviation, there is something more menacing than the mob. It starts at 32 Fahrenheit and only ceases to be dangerous once a decreasing thermometer throttles moisture from the atmosphere. It ruins airflow over wings and disrupts the ability of propellers to produce thrust. It has caused innumerable accidents throughout the history of aviation. Icing can be remarkably dangerous. We are forced to deal with it while living on the shivering side of the equinox.

The pilot of the charter flight was Don Jonz (feeling that “Don Jones” was too bland, he had opted for a more singular surname). Jonz was the president, chief pilot and sole shareholder of Pan Alaska Airways. Jonz possessed substantial experience in icing conditions (unsurprising for an Alaskan bush pilot). With tragic irony, he had written a magazine article about ice just prior to the accident. The article was published in *Flying Magazine* two weeks after N1812H had vanished. It was pithy with some good pointers: icing encounters occur predominantly around 0 Celsius; a change of a few thousand feet is generally enough to exit icing conditions; never accept a hold at an altitude where ice is accumulating, etc. Unfortunately, Jonz also drifted into bravado: “Be wary of pilots who say [that flying into ice] can’t be done. They can’t…If you don’t like ice, stay the hell out of IFR.”

The chartered Cessna 310C was sparsely equipped. Only the pitot tube was protected against ice. Certification rules were an odd animal in the early 1970s. Part 135 regulations had been around for less than a decade, and they did not yet provide guidance for operation into known icing conditions (rules pertaining to the aircraft were nonetheless still applicable). Within a year of the crash, new regulations were developed for light aircraft operated under Part 135.

Jonz’s flight plan took him through Portage Pass, a valley bounded by mountains. V-317 traced a line through the area with a MOCA of 8,000 feet. Two hours before Jonz was due to traverse Portage Pass, an Air Force helicopter turned back due to low ceilings and severe turbulence. Terminal and area forecasts indicated moderate rime ice between 6,000 and 15,000 MSL. Jonz bragged multiple times in his posthumous article about successfully traversing areas of ice without the need for deice equipment. A good guess is that Jonz set off towards Portage to take a peek. Facing bad turbulence and deteriorating visibility (with a couple congressmen in the back), a climb to a safe IFR altitude had to have sounded like a good idea.

The Right Tools for the Job

Ice protection is a multi-system affair on modern aircraft Flight into Known Icing (FIKI) equipment provides protection for the windshield, leading edge of the wings, engine intake, and pitot-static system. Propeller-driven aircraft are generally equipped with heated propeller boots as well. There is a good argument that this is the most important piece of equipment on a turboprop. A fouled prop does a poor job transferring power into torque.

Props are generally heated via a brush block and slip ring. An amp gauge indicates proper operation of the system. If the amps drop, at least one propeller boot has failed (this can generate an imbalance on the affected side as ice causes one blade to weigh more than the others). If the amp gauge indicates zero, the brush block is no longer in contact with the slip ring (none of the props will be heated). On most twin-engine aircraft, the system cycles between different propeller pairs to reduce total electrical load requirements. The amp gauge must be monitored over a period of time in order to ensure that the different sequences of heaters are working.

In general, turning on prop heat is better done earlier than later. If you wait until a quarter of an inch is on the prop before activating the system, you will inevitably startle passengers with the iterant thuds of shed ice slapping the fuselage (applicable to wing-mounted engines). Before long, the paint perpendicular to the prop arc will be sanded down to bare metal. More concerning is the fact that even

small amounts of ice can dramatically decrease thrust. This condition can be prevented by the immediate application of prop heat (turn it on when entering the clouds below 5 Celsius).

Jet pilots aren't off the hook. Fan blades are not any better with ice than props, though they are somewhat more resistant to accumulation. In a jet, the presence of ice will manifest as an abnormal vibration on the affected engine. Cycling the thrust lever is typically enough to shed the offending ice. As always, follow the type-specific guidance on your particular aircraft. It is a good idea when gearing up for the winter months to review cold weather guidance contained in the operating manuals. Don't get caught by surprise.

Ice in the Real World

In 2009, I was a brand new captain flying a Beech 1900D between Denver and Cheyenne. Snow showers were present at both airports. It was a short hop, and we were in icing conditions the entire flight. Descending into Cheyenne, the clouds became thick enough that I had a hard time seeing the leading edge of the wing. The airplane felt sluggish. I suspected that we were trucking around a substantial amount of ice. I flew the aircraft faster than was technically allowed, adding 10 knots to our approach speed.

The aircraft stalled a few seconds into the flare. There was no buffet or aural warning. We were 30 feet above the runway when the bottom simply dropped out. We left a divot in the touchdown zone following the hardest landing I ever had. Once it was shut down, I inspected the airframe. The wings were caked in a couple inches of ice. The ice was in the shape of an inflated deice boot. During the last few minutes of flight, the deice boot had been inflating inside a hollow block of ice. This particular phenomenon is referred to as bridging.

Bridging is a touchy subject. The NTSB dismisses it, contending in 2007 that "It [has been] established that ice bridging does not occur." The FAA is more nuanced, noting that bridging can occur with older deice boot systems. Both the NTSB and FAA are unanimous in their conviction that waiting for a predetermined amount of ice to accumulate before "blowing the boots" (a technique ostentatiously used to avoid bridging) does more harm than good. Their position stems from this: "Since 1982…43 icing occurrences involving turbine-powered airplanes…have resulted in 201 deaths and 16 serious injuries." None of the accidents were attributed to bridging. Several were associated with the failure to activate deice boots in a timely manner. The FAA encourages pilots to activate deice boots as soon as ice begins accumulating.

In truth, the operation of deice boots – while important – is secondary to maintaining sufficient airspeed. I had been reluctant to fly 10 knots faster than the published approach speeds (which already included a few knots to account for ice accumulation). In hindsight, I should have added 20 knots. A month after my event, a crew made an approach into Salina, Kansas. They encountered severe ice on final. The pilots reported windshield wiper arms encased in ice the size of baseball bats. They maintained 170 knots throughout the approach (40 knots above normal speeds). They only slowed once they were committed to landing. The aircraft touched down without incident. When the cabin door opened, it hit a six-inch cone of rime on the prop spinner. When ice is hanging off the airframe, speed is life.

Severe ice requires an immediate change in altitude to exit the conditions (continuing an approach in many cases is better than climbing back into the offending environment). Many aircraft manufacturers publish speed increments to be added during an approach in icing conditions. Technologically advanced aircraft automatically adjust stall margins when ice is detected by advancing the AOA of stall alert systems. Many modern aircraft automatically activate ice protection as soon as ice is detected. Certification guidance has, over time, adapted to ensure better safety margins. For all of this, many tried-and-true pilot techniques are still applicable.

Maintain sufficient airspeed. Occasionally turn off the autopilot in order to "feel" the aircraft. If it feels sloppy, go faster. Do not allow airspeed to degrade in order to maintain altitude. If you cannot maintain adequate speed, descend. Consider declaring an emergency to obtain ATC priority. Modern aircraft produce relatively stable stall characteristics when clean. On a contaminated airframe a stall can be sudden, asymmetric, and occur out of the blue. Snap spins can materialize without warning if airspeed degrades below safe ice speeds.

Fly Fast

On February 16, 2005, two Cessna Citations approached Pueblo Memorial Airport in Colorado. The sister ships were owned by Circuit City. They were flying from Richmond, Virginia, to Santa Ana, California. Both aircraft were scheduled for a short fuel stop in Pueblo, where IMC and freezing drizzle prevailed. Pueblo tower was vectoring inbound traffic for the ILS. The Citations were equipped with stick shakers programmed to alert seven percent in advance of stall speed. The aircraft had been retrofitted with an AOA computer, which added another five knots to stick shaker speed when engine anti-ice was selected to ON. The inboard wings and engine cowlings were protected against ice via heated surfaces. The outboard wings and horizontal stabilizer were protected by deice boots.

Only one deice boot activation was captured on the accident aircraft during the approach. The sister ship recorded five separate activations during their own approach (which took place 30 minutes after the accident). The sister ship carried excess airspeed throughout the approach, hustling through 1,500 feet AGL at 160 knots (they remained above 120 knots until descending below 200 feet). The accident Citation was decelerating through

98 knots at 1,500 feet – 62 knots slower in the same atmospheric conditions. The accident crew failed to reference ice accumulation speeds provided by Cessna during a truncated approach briefing. The first officer on the accident flight made an ambiguous reference to both the icing conditions and the decaying airspeed seven seconds before the aircraft entered a sharp roll. Six seconds following the initiation of the roll, the aircraft crashed.

At the time of the accident, deice boot procedures were on the NTSB's ten most wanted list for aviation safety. As such, it was not surprising to see the final report spend a substantial amount of time on the topic. In the end, the failure to activate the boots was not the primary cause of the accident. The failure to carry proper airspeed was. The appropriate ice reference speeds would have afforded the crew a 20-knot safety margin throughout the approach. On a long runway, a few excess knots would have been permissible as well. Although icing speeds are established to protect against max continuous ice accretion, the margins above stall may be less than what pilots are normally afforded. An additional fudge factor for a difficult approach can be appropriate in some circumstances.

When encountering ice, pilots must maintain a psychological balance between terror and boredom. There is no reason to be intimidated by ice. Still, a healthy dose of respect is called for. In truth, most ice encounters are relatively benign and can be safely traversed even in non-FIKI equipped aircraft. You should obviously not fly into icing conditions without properly functioning equipment, but do not panic if you find yourselves in those conditions inadvertently (or following equipment failure). Find a safe exit while maintaining sufficient airspeed.

Though fear can be a debilitating emotion when dealing with airborne threats, a blasé attitude is no better. Even properly certificated aircraft are not capable of managing anything more than light ice indefinitely. It is always a good idea to find another altitude when ice is encountered, no matter the intensity. A few thousand feet up or down is generally enough to exit the conditions. It does not take a ton of ice to be dangerous. A minimal amount of ice accumulation can dramatically increase stalling speeds, decrease propeller efficiency and increase drag. There is no such thing as a safe amount of ice, only a safe margin of airspeed. Be brave, but also be fast. T&T

Stan Dunn *is an airline captain and check airman. He has 7,000 hours in turbine powered aircraft, with type ratings in the BE-1900, EMB-120, EMB-145, ERJ-170, and ERJ-190. Stan has been a professional pilot for 14 years, and has been flying for two decades. You can contact Stan at* **stan@bellmanmultimedia.com.**

A Ferry Tale: Icing in Iceland

by **Joe Casey**

Sunrise over northern Canada.

I love flying international ferry flights. Flying outside the United States and seeing new cultures is always an adventure. Not to mention, none seem to go perfectly, which also adds spice to the whole event. (If you like as-planned, on-schedule flights, don't become a ferry pilot).

Often, I have a list of fellow pilots who want to go with me on these pop-up international flights and occasionally it works out to take them along. For the particular adventure in this story, Josh Best, who works with me at Casey Aviation, got his ticket punched to join (and his personal commentary can be seen in italics). This recent mission took place in a Piper Meridian from Texas to France. It was in an airplane I was intimately familiar with, and I was excited to fly this trip with Josh. But, like most flights that have trouble, all went well until it didn't. And when it didn't go well, it really didn't go well at all.

Josh: *Not only does Joe know this Meridian particularly well, more importantly, he understands the deice systems and their operation. His knowledge was much appreciated in the inclement weather and critical situation we encountered. As an instrument and commercial-rated pilot with 350 hours, I knew the trip was "beyond me" and my current experience. However, I was still very excited about the opportunity, and I knew situations would present themselves for me to grow as a pilot.*

Across the Atlantic

It was a September flight, so the North Atlantic had not yet brewed its normal wintertime weather cocktail of strong winds, low temps, low ceilings and nighttime. But, where there was no ice on the ground, the North Atlantic was brewing what it could aloft, and I was about to receive an object lesson on airframe icing.

This was an eastbound flight, so the amount of limited daylight was going to be even more limited by flying opposite the movement of the sun. We departed Montreal's Mirabel International Airport (Helibellule is a fantastic FBO) at 6 a.m. in hopes of making Goose Bay (CYYR) by mid-morning. It was then on to one of my favorite stops along the "southern route" of the North Atlantic, the weather-finicky but very beautiful Narsarsuaq, Greenland (BGBW).

After an hour or so on the ground at BGBW, we climbed out in beautiful clear skies, perfect for climbing up the Kiagtuut Glacier leading to the Greenland Icecap. (If you've never seen the Greenland Icecap, it should be on your bucket list. The immensity and beauty cannot be captured by a camera). As we came across the eastern coast of Greenland, the sun began to set and soon we were in the pitch dark of night over the North Atlantic. I climbed into the back of the airplane to check on the survival equipment. The PT6 in front of us was humming along smoothly, but another check of equipment seemed prudent.

All was progressing nicely until the descent into Keflavik, Iceland (BIKF). As we passed FL180, we began to notice the building moisture in the low light of the position lights on the wing. The pitot heat was already ON (as it always should be on every pressurized airplane), and we turned on the prop heat – as any pilot should do before entering visible moisture with temperatures below 10 Celsius.

Within about three minutes, we began to notice a faint burning smell. It was not strong, barely a whiff, but it was present. In another minute (or so), the PROP DEICE FAIL caution light illuminated. This is a red light and that caught my attention. The circuit breaker that protects the system had not popped, but with the red light, I was highly suspicious that any electrons were reaching the prop boots. Josh and I looked at each other like Scooby and Shaggy, both thinking, "Ruh roh!"

Josh: *"Ruh roh" was correct! I am pretty sure I'm Scooby in this situation. Shaggy voiced his thoughts out loud, and my subsequent thoughts were guided by his actions and words. Retrospectively, I was drained from the late night getting into Mirabel and the early launch that morning. The time change can affect your mental state subtly and discreetly. Honestly, before the red annunciator light went off, I wasn't thinking about ice except that it did look pretty flying by outside.*

I turned off the prop deice and continued the descent. After about three more minutes with the prop deice off, the smell seemed to vanish. I took note.


Flying a Piper Meridian up the Narsarsuaq Glacier.

My senses were on high alert for icing issues, and I turned on the wing ice light to reveal a light coating of white on the leading edge of the wing. There were now large droplets of moisture streaming by, made clear in the strobe light. (If you've not seen the dance of wintry weather in a strobe at night, it's a mesmerizing scene. I think it looks like a nonstop "warp-drive to light speed" experience in Star Wars. Except I'm in a Piper Meridian and not going warp speed).

With the build-up of ice on the wing, I deployed the wing boots. They "poofed" normally, and ice flew off the wing as it should. But then we got a WING DEICE FAIL caution light. This one is amber in color, but it might as well have been red for I knew I was in trouble. Looking out on the wings, the boots were not being sucked back flush with the wing. The system is supposed to use vacuum to suck the boots back in preparation for another deployment (poofing), but it was not happening.

So, now I had no prop deice, no wing deice, and I had a nice layer of North Atlantic moisture to fly through on my way to Keflavik. As I descended through 12,000, the OAT (Outside Air Temperature) was -8 Celsius and we were in the mix – a perfect scenario for lots of ice.

It was now decision time. I can't go back to Greenland. There's not an alternate. I must go to Iceland, no options. But, I did have some choices as to how I would handle the ice in the descent…should I recycle the prop deice and risk that burning smell? Should I recycle the surface deice? I looked back to the wing and saw what I believed to be a quarter-inch of rime ice present, with more accumulating. Ugh.

Josh: *A little fear crept in at the thought of the cold North Atlantic water, at night, and with inclement weather. It was comparable to being on the couch as a kid watching "Nightmare on Elm Street" – wishing it to end knowing I wasn't going to sleep well. But then, there was relief knowing we were continuing to fly and work through the situation: "Aviate, Navigate, Communicate."*

I decided to turn on the prop deice one more time. Bad decision? You decide, but I did not like the idea of making the descent in potential moderate ice without the props being clear of ice. When I pushed the prop deice switch, the PROP DEICE FAIL Caution Light illuminated instantly, and there was a 20 amp draw on the amp gauge. The faint smell returned. The only thing I want burning in an airplane is my desire to fly, so I turned off the prop deice and didn't turn it on

The Worldwide General Aviatio

owner/operators and chief pilots of these air

100%

TOTAL MARKET COVERAGE

JETS - 17,806

CHIEF PILOTS & OWNERS

COUNT	AIRCRAFT
36	AIRBUS ACJ319
30	ASTRA 1125
32	ASTRA 1125SP
57	ASTRA 1125SPX
29	BEECHJET 400
266	BEECHJET 400A
195	BOEING BBJ
503	CHALLENGER 300
40	CHALLENGER 600
26	CHALLENGER 601-1A
121	CHALLENGER 601-3A
54	CHALLENGER 601-3R
325	CHALLENGER 604
7	CHALLENGER 800
148	CITATION 500
340	CITATION 525
318	CITATION BRAVO
187	CITATION CJ1
96	CITATION CJ1+
240	CITATION CJ2
225	CITATION CJ2+
476	CITATION CJ3
174	CITATION CJ3+
368	CITATION CJ4
189	CITATION ENCORE
74	CITATION ENCORE+
392	CITATION EXCEL
14	CITATION I
280	CITATION I/SP
445	CITATION II
54	CITATION II/SP
155	CITATION III
124	CITATION LATITUDE
247	CITATION M2
467	CITATION MUSTANG
130	CITATION S/II
323	CITATION SOVEREIGN
105	CITATION SOVEREIGN+
310	CITATION ULTRA
285	CITATION V
31	CITATION VI
122	CITATION VII
329	CITATION X
38	CITATION X+
253	CITATION XLS
301	CITATION XLS+
1	DIAMOND I
32	DIAMOND IA
16	DORNIER ENVOY 3
304	ECLIPSE EA500
75	EMBRAER LEGACY 500
100	EMBRAER LEGACY 600
53	EMBRAER LEGACY 650
247	EMBRAER PHENOM 100
328	EMBRAER PHENOM 300
80	FALCON 10
22	FALCON 100
16	FALCON 200
242	FALCON 2000
27	FALCON 2000EX
34	FALCON 20C
15	FALCON 20C-5
17	FALCON 20D
1	FALCON 20D-5
10	FALCON 20E
49	FALCON 20F
75	FALCON 20F-5
197	FALCON 50
8	FALCON 50-40
118	FALCON 50EX
178	FALCON 900
24	FALCON 900C
116	FALCON 900EX
156	GLOBAL 5000
123	GLOBAL EXPRESS
25	GULFSTREAM G-100
239	GULFSTREAM G-200
14	GULFSTREAM G-300
24	GULFSTREAM G-400
313	GULFSTREAM G-450
11	GULFSTREAM G-500
602	GULFSTREAM G-550
27	GULFSTREAM G-II
12	GULFSTREAM G-IIB
111	GULFSTREAM G-III
175	GULFSTREAM G-IV
338	GULFSTREAM G-IVSP
204	GULFSTREAM G-V
38	HAWKER 1000A
2	HAWKER 125-1A
2	HAWKER 125-1AS
12	HAWKER 125-400AS
2	HAWKER 125-600A
1	HAWKER 125-600AS
61	HAWKER 125-700A
72	HAWKER 4000
223	HAWKER 400XP
44	HAWKER 750
153	HAWKER 800A
14	HAWKER 800B
398	HAWKER 800XP
42	HAWKER 800XPI
88	HAWKER 850XP
187	HAWKER 900XP
2	JET COMMANDER 1121
2	JET COMMANDER 1121B
2	JETSTAR 731
4	LEARJET 23
12	LEARJET 24
2	LEARJET 24A
7	LEARJET 24B
20	LEARJET 24D
8	LEARJET 24E
6	LEARJET 24F
4	LEARJET 25
19	LEARJET 25B
4	LEARJET 25C
45	LEARJET 25D
4	LEARJET 28
32	LEARJET 31
182	LEARJET 31A
26	LEARJET 35
398	LEARJET 35A
21	LEARJET 36
33	LEARJET 36A
32	LEARJET 40
243	LEARJET 45
225	LEARJET 45XR
92	LEARJET 55
6	LEARJET 55B
8	LEARJET 55C
307	LEARJET 60
623	PILATUS PC-12/45
149	PREMIER I
1	SABRELINER 40
7	SABRELINER 40A
2	SABRELINER 40EL
2	SABRELINER 40R
4	SABRELINER 60
5	SABRELINER 60ELXM
68	SABRELINER 65
7	SABRELINER 80
1	SABRELINER 80SC
67	WESTWIND 1
1	WESTWIND 1123
14	WESTWIND 1124
50	WESTWIND 2

TURBOPROPS - 12,801

CHIEF PILOTS & OWNERS

COUNT	AIRCRAFT
403	CARAVAN 208
1,523	CARAVAN 208B
155	CHEYENNE I
16	CHEYENNE IA
206	CHEYENNE II
56	CHEYENNE III
38	CHEYENNE IIIA
57	CHEYENNE IIXL
35	CHEYENNE IV
235	CONQUEST I
291	CONQUEST II
38	JETSTREAM 31
63	JETSTREAM 32
52	JETSTREAM 41
37	KING AIR 100
450	KING AIR 200
17	KING AIR 200C

PHOTO BY JESSICA AMBATS

Aerial of an Icelandic volcano.

again this flight. A fire in flight is the greatest risk I can concoct in my aviation mind. I was going to have to figure out how to make it to Iceland without prop deice.

I recycled the wing boots and nothing happened. No ice flew off the airplane. The boots were "poofed" and were not going to be able to help rid the wings of ice. This was going to be an interesting descent.

I called Reykjavik Control and asked about the weather at Keflavik. As it turned out, the weather was 1,800 OVC and the temperature was 4 Celsius. That was good news. Icing usually happens in a reasonably thin layer, and I planned to descend through to a lower altitude quickly. Reykjavik Control gave me a descent to 3,000 MSL and I increased the airspeed to 165+ KIAS, well above the minimum icing speed of 130 KIAS for the Piper Meridian. I then commanded a 2,500 FPM descent and dove down through the clouds.

My eyes were on the flight instruments, but I probably looked like a wander lost chameleon as I seemed to keep one of my eyes on the illuminated wing and the other on the panel. More ice built up on the wings, but the mighty Meridian never showed any bad in-flight manners.

Finally, when I descended through 4,000 MSL, all of the ice flew off the airplane within seconds. I must have hit a warm layer and the high speed caused tremendous shedding. As the ice flew off the airplane, so did my worries. Within a few minutes, the long runway and incredible LED airport lighting at BIKF came into view, giving me complete comfort that all my icing worries were gone for this flight. The landing was uneventful. We were both happy to end the long day of flying.

Josh: *It's funny, but the longest part of the trip was those three minutes descending into Keflavik. Yet, they were also the most beneficial for me as a pilot. There is a reason why you see businesses use an "apprentice" type model to teach newcomers the ropes. Icing will not be as nerve-racking the next time it happens. I will be ahead of the plane instead of behind it.*

Post-Flight Analysis

A maintenance investigation showed there was a small short in one of the prop boots that caused a small burnt area on the boot. There was probably a little bit of smoke that entered the engine inlet, went through compression, and was tapped at the P3 bleed air line, which then entered the cabin as air for pressurization. It was probably good that I didn't turn the prop heat on in-flight more than I did for I'd have risked sending electrons to an electrical short. What about the surface deice? We could not find a problem. It worked perfectly on the next flight. Sometimes mechanical devices can throw you a curveball.

So, did I handle that situation right? Well, we landed at Keflavik safely, so it could be argued that I did. But, as with all armchair opportunities, there were certainly things I could have done better. The biggest lesson learned (or confirmed) is that I should have tested the equipment better beforehand. Of course, I checked the system back in Texas and sporadically along the way, but I think I should have flown with the icing systems operating for longer periods as I flew closer to civilization and a potential maintenance facility. Had I known about the faint smell, I could have remained in Goose Bay to get the system fixed.

If I have one overarching lesson from this experience, it would be that icing exacerbates any bad situation.

It complicates things. Yes, the Meridian is FIKI-equipped, but if you lose any one aspect of the FIKI system, the airplane will not be ready for an icing scenario. Ice can turn a seemingly easy flight into a disaster if you are not prepared. I tell my clients, "Never hang out in ice." Why? When you are in ice, you never know the amount of accumulation you might develop. Things can rapidly go from good to terrible.

In an icing discussion, there's more to mention. Concerning flaps in ice, less is better. I made a good choice by not deploying flaps while in ice. And by keeping the airspeed up. There's probably a "minimum icing speed" listed for your airplane, and this number is one you should have memorized. If you are in ice, your wing will stall at a lesser angle of attack than normal because of the disrupted airflow. And your stall warning vane will not work at all, even if you have stall warning heat on. With ice, make sure you fly at a higher airspeed and do not make abrupt flight control inputs.

What's the most important "takeaway" I hope you get from my Iceland icing discussion? It is this: What happened to me at the 65 degrees of north latitude will have a strong potential to happen to you at the 27th thru 49th latitude soon. The wintery weather is moving towards us. Now is probably the right time to start flying with the icing systems on to ensure your system will be ready when you summon the electrons. Plan, prepare and mentally commit that you will not let an icing potential catch you off guard. Commit now that you'll avoid moderate icing, that you'll never fly in freezing precipitation, and that you'll turn on pitot heat on every flight. T&T

Joe Casey *is an FAA-DPE and an ATP, CFI, CFII (A/H), MEI, CFIG, CFIH, as well as a retired U.S. Army UH60 standardization instruc-tor/ examiner. An active instructor in the PA46 and King Air markets, he has accumulated 14,300-plus hours of flight time, with more than 5,200 dual-given as a flight instructor. Contact Joe at joe@flycasey.com or 903.721.9549.*

Special Olympics Airlift

The event returns, expanding to more aircraft types.

by **MeLinda Schnyder**

PHOTOS COURTESY OF TEXTRON AVIATION

Each time Steve Sperley reaches out to an owner or pilot who has participated in a past Citation Special Olympics Airlift, he hears a similar story.

"They tell me this endeavor is the most important they have ever done with their aircraft," said Sperley, vice president of sales for Textron Aviation. "It's pretty neat to hear and makes us that much more excited to again be coordinating an airlift for the Special Olympics and asking for the support of our Citation, King Air, Beechcraft and Hawker customers."

Textron Aviation is coordinating its philanthropic airlift to happen in 2022, matching aircraft operators with Special Olympics athletes from around the U.S., Puerto Rico and the Caribbean who need a lift to the 2022 USA Games next June in Orlando.

The tradition of the airlift started in 1995, when Wichita, Kansas-headquartered Cessna informally transported the Special Olympics Kansas delegation in two Cessna Citation business jets to the International Winter Games in Salt Lake City, Utah. Since then, the company has conducted six airlifts, engaging customers and industry partners to provide transportation for nearly 10,000 athletes and coaches from across the country to Special Olympics World Games and USA Games.

The June 2022 airlift will be the first one in eight years, and it's the first since Cessna and Beechcraft became Textron Aviation. That means instead of being the Citation Special Olympics Airlift, it's the Special Olympics Airlift, and organizers are recruiting Beechcraft King Air, Premier and Beechjet models, Hawker aircraft and Cessna Citation business jets.

"We're excited to welcome those folks in the family to participate for the first time," Sperley said. "We're going big this year with a goal of 228 Doves, and if we get anywhere close to our goal we think we can reclaim the title of the largest peacetime airlift in the world."

As we went to print, the Special Olympics website showed 108 aircraft had registered and 120 still needed. The 228 number came about because the FAA says that's about the maximum number of aircraft it safely handles at Orlando Executive Airport on arrival day, June 4, and again on departure day, June 12. And February 28 is the date when organizers need to know how many aircraft they have to work with when working with state Special Olympics delegations to offer transportation.

Special Olympics provides year-round sports training and athletic competition in a variety of Olympic-type sports for children and adults with intellectual disabilities, giving them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other Special Olympics athletes and the community.

All expenses – from facilities during training to meals and lodging during competition – are paid for by Special Olympics in hopes that no one is left on the sideline due to inability to pay. Travel is one of the largest expenses for state programs sending athletes to the USA Games, which take place every four years.

"Traveling to Orlando for the 2022 Special Olympics USA Games may be the first time some of our athletes ever leave their hometown, let alone fly on an airplane. The travel experience provided by Textron Aviation and its customers will be the ultimate bookends for one unforgettable week," Tony Wyllie, regional president of Special Olympics North America, said in a March 2021 news release announcing the airlift.

Sperley said the pilots he's talked to get as much out of participating in the event as they give.

"Everyone goes in thinking this is a nice way to help their community, and they leave feeling it meant more to them than the people they are flying," he said. "Nobody anticipates that it's going to be such an emotional experience for them."

Long-time Citation pilot Michael Herman agrees.

"Fly the Special Olympics Airlift once and you'll understand," said the owner of a 2006 Citation CJ3. "I fly many diverse philanthropic missions, and this one is at the top of my list because of the athletes we transport."

Herman has participated in each airlift since 1999, the same year he began flying Citations. He said he went in not knowing what to expect and walked away impressed by how organized the airlift runs and how much he connected to his passengers. He's had each airlift athlete sign a hat that he keeps in his office and he plans to do the same during his fifth airlift in 2022.

Connecticut-based Whelen Engineering was one of the first to register for the 2022 airlift and was Dove No. 1 in the last airlift, recognizing that they were the first to register for the airlift.

"Flying in the airlift is the most rewarding flying I've ever done," said Whelen chief pilot Dennis Piscitello, an 18,000-hour pilot. "It's an absolutely amazing experience as a pilot, and I'm thankful to have a company and owners who support our involvement year after year."

Whelen designs and manufactures visual warning equipment for the automotive, aviation and mass notification industries, making it a customer and supplier for Textron Aviation. This will be the sixth time the

2022 Airlift Details

Who: Owners and pilots of Beechcraft King Air, Premier and Beechjet models; Hawker aircraft; Cessna Citation business jets are being asked to donate the use of their aircraft, pilots and fuel.

What: Help transport a portion of the over 4,000 athletes and coaches around the U.S., Caribbean and Puerto Rico invited to the USA Games in Orlando on June 4, 2022, and then return them to their home bases on June 12, 2022.

How: Register at txtav.com/airlift by Feb. 28.

Textron Aviation President and CEO Ron Draper (third from left) with Special Olympics Kansas athletes.

History of the Airlift

The 2022 Special Olympics Airlift will be the eighth coordinated by Cessna Aircraft Company and now Textron Aviation. Customers and industry partners have combined to provide transportation for nearly 10,000 athletes and coaches from across the United States to Special Olympics World Games and USA Games. Here's a look at the event's history:

- 1985: Cessna transported the Special Olympics Kansas delegation in two Cessna Citation business jets to the International Winter Games in Salt Lake City, Utah
- 1987: First official Citation Special Olympics Airlift: 132 aircraft, International Summer Games, South Bend, Indiana
- 1991: Second Citation Special Olympics Airlift, 180 aircraft, International Summer Games, St. Paul/Minneapolis, Minnesota
- 1995: Third Citation Special Olympics Airlift, 197 aircraft, International Summer Games, Hartford, Connecticut
- 1999: Fourth Citation Special Olympics Airlift, 260 aircraft, International Summer Games, Raleigh-Durham, North Carolina
- 2006: Fifth Citation Special Olympics Airlift, 235 aircraft, U.S. National Games, Des Moines, Iowa
- 2010: Sixth Citation Special Olympics Airlift, 160 aircraft, U.S. National Games, Lincoln, Nebraska
- 2014: Seventh Citation Special Olympics Airlift, 97 aircraft, U.S. National Games, Trenton, New Jersey

Source: Textron Aviation

company has donated the use of its business jet, fuel and pilots to the Special Olympics Airlift.

Sperley said the airlift hopes to attract more King Air operators who might not be as familiar with the airlift effort.

That was the case for Patrick Murphy, who uses his 1981 Beechcraft King Air C90 based in White Plains, New York, for business and personal missions, and regularly flies for a number of charities. In addition to improving his skills as a pilot, Murphy said philanthropic missions allow him to improve the lives of those around him.

"My attitude toward Special Olympics and charity flying in general is that it gives you a chance to use an asset that you already have, and you're using the skills that you've honed in a way that makes someone else's life easier." T&T

MeLinda Schnyder *is a writer and editor based in Wichita, Kansas. She writes most often about aviation, business and travel. She worked 12 years in the corporate communica-tions departments for Beechcraft and Cessna Aircraft Company. MeLinda can be reached at mvschnyder@ gmail.com.*

From the Flight Deck

by **Kevin R. Dingman**

Shirt Creek

Pilots don't complain. We use euphemisms.

After a landing roll, which necessitated a call to Ground and the FBO.

com·plain/kəm'plān/verb

Express dissatisfaction or annoyance about something. In pilot parlance: a squawk.

Sometimes people confuse our technical, studious, perfectionist, Type A pilot-personality with that of a complainer. My mom and dad would say, "If you can't say something nice, don't say anything at all." Failure to abide by this maxim or using "bad" words (even euphemisms) could result in mouths being washed out with soap. If the infraction so deserved, Grandma liked a "switch" from a nearby tree. Dad preferred his belt, and mom's favorite instrument was a paddle. The complaining for which I may be due a scolding this time is aircraft maintenance. The paddle in this story, however, provided relief and not pain from a difficult-to-diagnose propeller squawk.

Patience is a Virtue

I haven't flown the Duke in many months. And since I stopped flying for a living in July, the last few non-flying months have been painfully unique. I am non-current for the first time in five decades; my Santa-like beard a prickly reminder. Thankfully, a week at Oshkosh and a month of hunting in New Mexico helped placate my withdrawal. Perhaps my angst can be blamed on a moderate lack of patience. Well, perhaps more than moderate. The Duke's annual inspection scheduled to begin on April 1 didn't start until late August. And therein lies grievance number one (hide dad's belt).

Unfortunately, the long delay was not unique to me, my shop or the Duke. A handful of fellow GA pilot/owners experienced similar maintenance delays and shortages, apparently due to the "COVID Effect," which disrupted providers, manufactures, suppliers, distributors and shippers. In addition to my shop having a backlog longer than the line at Chick-fil-A, I'd been fighting a squawk that surfaced after last year's engine overhaul: The right propeller developed a propensity for uncommanded, self-feathering. Thus complaint number two (hide grandma's switch).

Paddle Me

Fortunately, the self-feathering only occurred with hot oil, low RPM and on the ground – like on landing roll or while taxiing to the hangar. Two or three times I made it all the way to the hangar before the right prop feathered, but a few others, it feathered during the landing roll or as we cleared the runway. This resulted in an inconvenient and embarrassing call to ground control and the FBO to coordinate a tow. The Duke will not taxi on one engine. After the oil cooled, it was sometimes possible to unfeather the prop by attempting an engine start, but the technique and finesse required were often beyond my ability. And for those who have never attempted to unfeather a stationary prop by manually twisting the blades using one or two sets of

A precautionary shutdown is the most common reason for a single-engine landing.

hands, the spring tension holding the prop in the feathered position is significant – brute hand strength is insufficient.

I always believed that a device known as a "prop-paddle" was an acceptable un-feather tool. Hartzell told me that it is not and internal damage is possible if attempted. And this new prop-paddle knowledge is why I stopped using a homemade version of the tool, stopped flying the Duke and awaited the annual inspection for diagnosis and repair. It took calls to the Tiffin Aire prop shop, Duke guru Bob Hoffman and Hartzell Propeller's technical help-line to explain to me the intricacies of propeller mechanics so as to develop a plan of action. Eventually, Lycoming Service Instruction 1462A provided the answer.

Full Feathering Props 101

Piston engine, controllable-pitch propellers come in several flavors, but the majority share a common design. Prop blade angle is controlled by the motion of a piston inside the propeller dome. This piston is moved by oil pressure on one side, with counterweights and a strong spring (usually augmented by a charge of compressed nitrogen in the prop dome) on the other. The counterweights do most of the work to drive the blades into feather (high pitch). The springs help to feather the prop when the centrifugal loads acting on the counterweights do not have enough centrifugal force to drive the blades completely to feather. As oil pressure changes, the piston moves, and the blade angle changes through gearing between the piston and the blades themselves. If oil pressure drops below a set minimum, the propeller blades drive to the feather position. In this situation with most twins, the propeller goes to so high a pitch that the blades flatten out relative to their direction of rotation, being twisted to the low-drag, feather position (82 degrees in the Duke, for example).

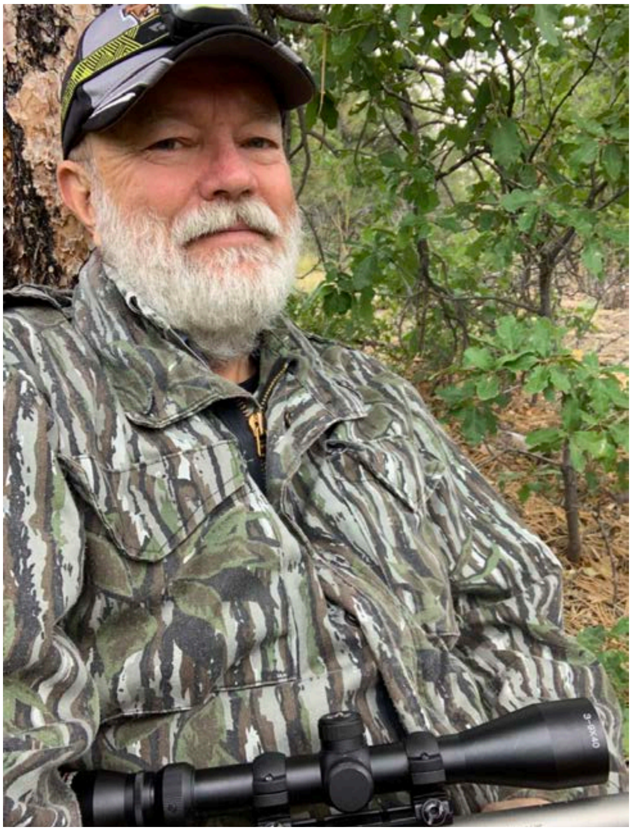
To drive the blade angles from feather (high pitch low RPM) back to low pitch high RPM, or to keep them there, you must have oil pressure. The oil psi of which we speak is not only from the engine's oil pump (the psi you read on the gauge), but the prop governor gear pump boosts oil pressure before it heads out of the governor and into the propeller hub. With the boosted pressure, you get a better, quicker response from the propeller when you move the lever in the cockpit. Low oil pressure can occur intentionally through the use of this blue propeller control lever by pulling the handle to the feather position; this opens a valve that dumps all oil from the prop dome and drives the blades into feather. Or, the low pressure can occur due to a massive oil leak or a "mechanical failure." The mechanical failure mode is what I was experiencing with the right prop in the Duke – more on that and Lycoming SI 1462A in a bit.

Feather Me Not

Under normal operation, a component called an "anti-feather lock" is supposed to catch the prop as it attempts to feather when RPM and oil pressure decrease. The anti-feathering lock pins are held out of contact by flyweights when the engine is running and engage when propeller speed drops to 600 to 800 RPM. But for the anti-feather lock to move into place, there still must be a certain amount of oil pressure as the engine slows to a stop. Conversely, while sitting on the ground with the engine shut down, the prop sits on that latch until you start the motor. The locks help keep some oil in the prop dome and avoid friction and vibration when we shut down the engines.

In an in-flight emergency or training scenario with air load driving the propeller blades, moving the prop control to feather causes the prop blades to twist to feather pitch before the lock pins engage, and the propeller feathers. During a normal on-ground shutdown, the air load is absent, and when the engine shuts down, the prop reduces RPM slowly enough that the anti-lock pins drop into place as the rpm drops through that 600 to 800 RPM range. The prop blades will twist no further, so they don't go into feather. No


A professionally made prop-paddle by Tiffin Aire.



Four months of non-flying produced a Santa-like beard.

vibration, no oil-starved prop dome gears, and no cranking against dry metal on the next start-up. Enter Lycoming Service Instruction 1462A.

My Kingdom for Oil Pressure

According to Lycoming, SI 1462A should be accomplished "Whenever sluggish propeller action is reported, when the engine does not hold RPM during cruise, climb or descent, or whenever the engine (I'm certain they meant propeller) is going into feather during landing roll out with reduced throttle setting." The purpose of the air pressure check to the propeller governor system is to determine if the governor oil passages have excessive clearance, leaks or blockages (tight clearance). The air pressure check shows the condition of governor oil passages, front bearing clearance, and positioning of the governor circuit oil plug. The test procedure directs you to attach a test plate and pressure gauge to where the prop governor mounts to the engine. First, the test plate is used to verify oil psi with the engine running – this verifies you have good baseline oil psi. Next, you shut down the motor, attach a differential air pressure tester to the same test plate and input 40 PSI.

The output (prop governor circuit) should be between 6 and 35 PSI. The Duke's was around five. The reason for the low number was that during the engine overhaul, while within tolerance, the crankshaft was undersize. The overhauler installed new "normal" sized bearings on the crankshaft when, since the crankshaft is undersized, he should have installed oversized bearings. The undersized crank and normal size bearings created too large of a clearance at the front bearing, resulting in too low of oil pressure to the prop governor. With the excessively low oil pressure, the system acted just as it should – it allowed the prop to feather.

Grumpy Old Man

Since I'm officially old and on Medicare, and being a grumpy old man was moved to the Normal Procedure section from the Abnormal and Emergency sections, perhaps I can get away with some venting – as long as I comply with the Limitations section. But after grounding my poor Duke for a few months and paying $26K to fix the main-bearing misstep, complaining is difficult to hold back. I can taste the soap. T&T

Kevin Dingman *has been flying for more than 40 years. He's an ATP typed in the B737 and DC9 with 28,000 hours in his logbook. A retired Air Force major, he flew the F-16 and later performed as an USAF Civil Air Patrol Liaison Officer. He flies volunteer missions for the Christian organiz tion Wings of Mercy, is employed by a major airline, and owns and operates a Beechcraft Duke.Contact Kevin at* **dinger10d@gmail.com**.

Vine to Wine

Vintner and Owner-Pilot John Jordan

by **Grant Boyd**

John Jordan's aviation journey is not unlike that of many reading this article. His childhood fascination with model airplanes eventually led him behind the yoke of a Cessna 172 as a teenager. Since earning his Private Pilot Certificate in 1989, Jordan has owned more than half-dozen piston and turbine airplanes.

Today, he is routinely behind the yoke of three vastly different aircraft – each with its own uniqueness and reasons behind being in Jordan's personal fleet. Between his 2021 Maule Tricycle Gear Model 235, 2017 Cessna Citation M2 and 1995 Gulfstream GIV-SP, Jordan can select from a full body of speed, range and payload.

The fleet complements and supports his profession as a vintner and proprietor of Jordan Vineyard & Winery in Sonoma County, California. This business was founded by his parents, Tom and Sally, in 1972. Whether it is a low aerial hop over the 1,200-acre winery property to survey soil and vine vigor (a job well suited for the high-wing piston), a transatlantic flight to showcase the brand's newest offerings (the GIV-SP's perfect calling), or something in between (the M2 takes the cake), aviation has benefited the business in many facets.

Jordan's integration of flying and business traces back to his career's formative years. While a student at Occidental College in Los Angeles, he continued to fly and added several ratings during that period. His time spent at the university culminated with both an economics degree and ATP certification once he turned 23.

Several years after graduating from Occidental, Jordan ventured back to the northern part of the state and enrolled at the University of San Francisco and Empire College School of Law. During that time, he also joined the Navy Reserves. Over the next three years, he concurrently pursued both a Master of Business and a Juris Doctorate degree.

Jordan spent as many hours as he could in the sky, with flying being a welcome distraction from the rigors of the classroom. The integration of flying and daily life continued after graduation when Jordan joined the Santa Rosa-based firm he clerked when a law student. After two years of working there, he opened his own firm in Sonoma County, which specialized in civil litigation law.

As he neared 33 years old, the call of pairing his varied business and legal experience in a new manner unexpectedly came to fruition. His father Tom was ready to formally transition the business to the next generation and asked his son to take over operations. The winery was approaching the same age as John Jordan, having also been born in 1972. It was positioned for continued growth into new and existing markets.

After some consideration (as he wasn't expecting this new potential career change), Jordan accepted and stepped away from practicing law and assumed the position of Chief Executive Officer of the vineyard in 2005. Having been involved with the business since day one, even from a distance, he was able to easily guide the business using much the same flight plan it had followed for decades.

Jordan Winery's original vision focused on chardonnay, cabernet sauvignon and hospitality. To this day, the brand remains committed to these aspects and sees the drink differently than many other wineries. "We believe that wine should not overpower the food at your table but act as the bridge that connects all the little details of a memorable meal. The longevity of our wines, the diversity of our land, and the creativity of our people ensure that Jordan is more than a bottle of wine."

Jordan has continued a tradition of sustainably providing food, wine and hospitality while concurrently overseeing various improvements throughout his tenure as general manager. Introducing aviation and increasing integration into winery operations are the more notable improvements to the previous business model.

Flying has enabled the company to meet with clients and attend business meetings more easily. As he noted, "The aircraft enables me to make a day trip where otherwise it would be a two- or three-day trip that wouldn't be worth the time."

Prior to his current three aircraft, Jordan owned many other models, including a Mooney 231, Beechcraft Bonanza, Piper Cheyenne 1A, Beechcraft King Air F90, Gulfstream G3 and TBM 900. The latter was replaced by his current Cessna Citation M2 because he desired the speed and redundancy of the Citation. As he said, "There are a lot of trips that I can comfortably do in the multi-engine Citation that I could not do in the TBM."

With around 7,500 flight hours across various aircraft types and models, Jordan is impressed by his M2. When asked what he enjoys most about the aircraft, he noted reliability and the Garmin G3000 avionics suite. Prior to its acquisition, he considered another light jet, the Embraer Phenom 100. While it too had Garmin avionics (G1000), he ultimately chose the Cessna due to Textron Aviation's support network as well as its speed and offering of hot wings over boots.

Jordan purchased the M2 in 2017 directly from the manufacturer, and it finds regular use, being flown roughly 300 hours a year. While he flies to various destinations all across

Jordan Vineyard & Winery

the continental United States, some more frequent landing locations are Las Vegas, Denver, Los Angeles, Coeur d' Alene and Miami.

While the M2 has been instrumental in his business travels, Jordan also utilizes it for leisure and other purposes, including carrying friends and family. His mother, Sally, is a common passenger and often flies on the aircraft to visit the winery she and her husband designed from scratch. Being a driving force for the original vineyard dining room and longtime advocate for visitor experience, they flew to see the dining room after its remodel in early 2021. Her enthusiastic blessing was the final touch prior to guests enjoying the redesigned space.

Other common passengers on Jordan's M2 are rescue and service dogs. Over the years, he has flown for several organizations as a volunteer pilot, like Wings of Rescue and Canine Companions. A recent trip took Jordan from STS (Charles M. Schulz-Sonoma County Airport) to APA (Centennial) with two Labrador Retrievers in tow. These puppies were being transported to their new homes in the Denver area. There, they started their 18-month service dog training with Canine Companions' volunteer puppy raisers.

Jordan's own rescue Labradors can be seen roaming the winery grounds with his home and airstrip (for the Maule) located adjacent to the property. Other animals, such as chickens, also reside at the winery. The farm and gardens onsite are relied upon heavily as sources for the freshly prepared dishes that are artfully paired with Jordan wines at special dinners.

Jordan himself is a regular attendee of these events. He is proud to showcase his family heritage and fulfill their mission to bring great wine, food and hospitality to others.

For more information about Jordan Vineyard & Winery, visit jordanwinery.com. T&T

Grant Boyd *is a recent MBA graduate of Wichita State University. A private pilot, Boyd is currently working toward his instrument rating, with the ultimate goal of combining his love of business and aviation with a career at a general aviation manufacturer. You can contact Grant at* **grantboyd2015@gmail.com**

Ad Index

by **David Miller**

Tribal Knowledge

How do you acquire your knowledge about your airplane? Flight instructors, mentors, simulator training and owner websites are just a few places. Sometimes, the best advice comes directly from fellow pilots who operate a plane just like yours. We call this interaction "hangar flying." I recently witnessed a great example.

Ten Citation Jet Pilot's (CJP) owners met for several days in Wichita this summer to discuss safety initiatives. On departure day, their airplanes were parked on the hot, dry ramp at Yingling Aviation. One member new to the Citation world, David Gasmire, was pre-flighting his beautiful M2. With inspections complete, David walked into the FBO to settle up.

Then someone shouting, "Hey Dave" got his attention. It was the voice of CJP Chairman Randy Broiles, an experienced pilot, parked next to David in his Citation 2+. "I heard that a brief downpour passed over the airport last night. Not sure if you are aware, but the runoff can accumulate in the main cabin door seal in heavy rain. It's impossible to see unless you push the door seal apart. Trapped water can freeze at altitude, causing door problems. Over time, it can even cause the seal to rupture and a loss of pressure into the cabin."

"Wow, I am almost always parked in a hangar. I didn't know that was an issue," David replied. Randy went on to describe how to look for the water and easily remove it. Before boarding, David pulled the door seals apart and sure enough, Randy was right. Hidden between the seals was enough water to soak a handkerchief. In seconds it was removed, and David was on his way.

Years ago, at our CJP annual convention, we invited the late Bob Hoover to be our keynote speaker. On the first day of the event, Bob was admitted to the hospital and could not attend. We had to fill 90 minutes of time with no one to do it. Frantically, I suggested we put all the Mustang owners in one room, all the CJs in another room etc. and have them talk about their experiences. It turned out to be the highlight of the convention!

Tribal knowledge is an important part of flying. And it can happen in the least expected places.

A few years ago, I was in the fresh fruit section of my local grocery store. My cellphone rang.

"Hey Dave, I need some help." It was fellow CJ1+ owner Bern Kotelko from Canada. "I am flying at FL400 over Alberta, and my Collins FMS has dropped offline."

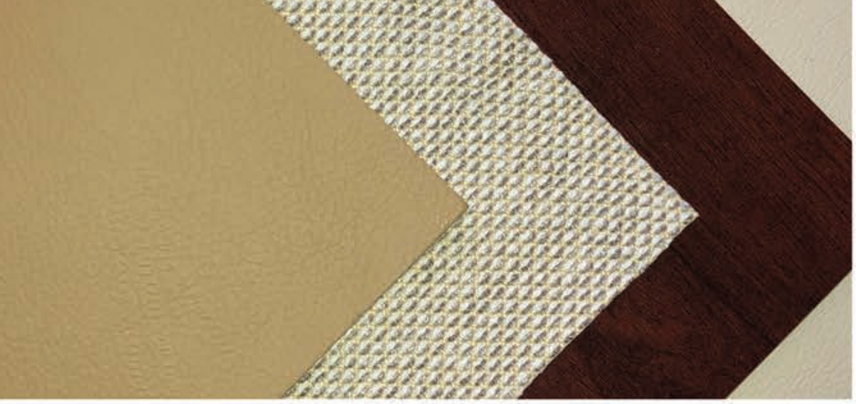
"So, Bern, you are at 40,000 feet and lost over Canada," I mused. Hearing this, several moms gathered their children a little closer near the bananas. "It's okay, Becky," one mom said. "That man is just a little strange."

Indeed, Bern's flight management system (FMS) had gone bananas, and he had forgotten how to reboot it. Somehow, I remembered the steps and led him through the exercise. Within a couple of minutes, Bern figured out exactly where he was and how to get to his destination.

Tribal knowledge is a good thing. Pass along yours.

Fly safe. T&T

David Miller *has owned and flown a variety of aircraft from light twins to midsize jets for more than 50 years. With 6,000 plus hours in his logbook, David is the Director of Programs and Safety Education for the Citation Jet Pilot's Safety Foundation. You can contact David at* **davidmiller1@sbcglobal.net**.





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