Issue #133

MAFC December 2023

Editorial Staff:
Charles Burke, Dave Pathe
Padraic Shay & Denise Skinner

MONMOUTH AREA FLYING CLUB

BOT Meeting
12/14/23 @ 7 PM
Club House
(THURSDAY)

Membership Meeting
12/16/23 @ 9 AM
(Saturday)

Inside this issue:

Page 1
Breaking the (Carb) Ice

Page 3
Wright Answers
Footlocker

Page 4
NIKE Missils

Page 5
Guide to being a pilot

Page 6
Quips
Overheard
Answers
Top fliers
Local airports
Cartoon
Paint jobs

There is probably no greater resource on the topic of aviation safety than the FAA and one of it's primary publications for pilots being the FAA Safety Briefing Magazine.

Breaking the Ice: Myths and Misconceptions About Carburetor Ice by Tom Hoffmann, FAA Safety Briefing Magazine

When it comes to aircraft icing, it's usually the clear or rime variant accumulating on airframe structures that gets the spotlight. And for good reason. Structural icing has hugely debilitating effects on all four major forces in flight and can be deadly if not avoided or handled properly. However, there's a more insidious type of icing lurking under the cowling that can prove just as deadly and is prevalent in a more varied range of weather conditions than its chilly cousin.

Carburetor icing, or carb icing, can starve an engine of its power-producing properties, often without warning. Thankfully, carb ice can be fairly easy to avoid and/or mitigate — provided you're familiar with the correct information and procedures. Yet, every year many pilots find themselves victims of carb ice and unaware of its propensity in some warmer environments.

A recent search for carburetor icing-related accidents since 2018 in the NTSB's aviation accident database rendered 192 accidents, 19 of which were fatal. A common theme among the accidents was the inability to recognize carb icing symptoms and the improper use of carburetor heat.

So, what can pilots do to combat this icy villain? Let's take a closer look at what carb icing is, how it can affect your flight, and how to deal with it.

What is Carb Ice?

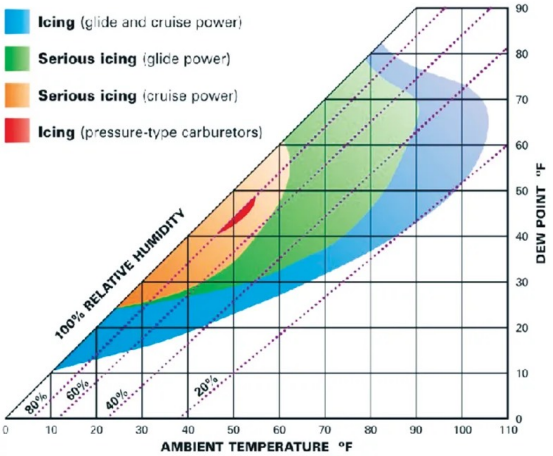
Carb icing occurs when moisture in the air freezes and collects on parts inside of the carburetor and/or the air intake, blocking airflow to the engine. It can happen to any carburetor under the right atmospheric conditions and even a small amount can cause a power loss.

As noted in FAA Advisory Circular (AC) 20–113, Pilot Precautions and Procedures To Be Taken in Preventing Aircraft Reciprocating Engine Induction System and Fuel System Icing Problems, and the FAA Safety Team's Winter Flying Tips pamphlet, there are actually three types of carburetor icing to be aware of:

Throttle ice forms at or near a partly closed throttle valve. The water vapor in the induction air condenses and freezes due to the venturi-effect cooling as the air passes the throttle valve. Since the temperature drop is usually around 5 degrees F, the ideal temperatures for forming throttle ice would be 32 to 37 degrees F (although a combination of fuel vaporization and throttle ice could occur at higher ambient temperatures).

Fuel vaporization ice forms at and downstream of the point where fuel is introduced and occurs when the moisture content of the air freezes as a result of the cooling caused by vaporization. It generally occurs between 40 and 80 degrees F but may occur at even higher temperatures supercooled moisture in the air is still in a semi-liquid state. (Note: Impact ice can also block the air filter and rob the engine of air needed for combustion, even on a fuel-injected engine.) whenever the relative humidity is more than 50%. Fuel icing usually occurs in conjunction with throttle icing and is most prevalent in engines with conventional float-type carburetors.

A key takeaway here is that carburetor icing doesn't just occur in freezing conditions; it can occur at temperatures well above freezing when there is visible moisture or high humidity. You'll notice in Figure 1 below that the temperature and humidity range most prone to carb ice covers many conditions we fly in throughout a good part of the year. While this chart can help determine prime conditions for carb icing, remember it can still occur in conditions outside of that range.



It's also worth noting that differences in engine airflow and cowling design make some aircraft types more prone to carb ice than others. For example, due to engine design and carburetor placement, a high-wing Cessna 182 with a big-bore Continental engine is more likely to build carb ice than a Lycoming-powered Piper *Cherokee*. Just remember that no carbureted engine is immune from carb icing, nor is a fuel-injected engine immune from impact icing.

How Do I Know I Have Carb Ice?

Carburetor ice can be detected by a drop in rpm in fixed-pitch propeller airplanes and a drop in manifold pressure in constant-speed propeller airplanes. You may also experience engine roughness and vibration when carb ice is encountered.

Pilots should also be cognizant of the increased likelihood of carb ice during certain low-power configurations like descents and idling on the ground. If the pilot doesn't take immediate action to clear the ice, it will continue to restrict the fuel/air flow and the engine may lose power completely.

"In my experience, throttle ice, which seems to manifest itself on cold days during extended periods of ground operations, is the type of carb icing that seems to be unfamiliar to many pilots," says Andrew Walton, director of safety at Liberty University's School of Aeronautics.

Walton shared an enlightening scenario of such an encounter with throttle ice during an instructional flight at Liberty in 2009. As reported by the instructor onboard, a Cessna 172 had an extended wait before takeoff due to inbound traffic. The outside air temperature was just above freezing and the humidity was low. Once airborne, the instructor stated that the engine started cutting in and out. They applied carb heat in case of icing and immediately returned to the field. It appears throttle ice had developed at low power after the run-up and while waiting for takeoff.

"This incident demonstrates that while pilots are generally aware of the possibility of fuel ice at higher temperatures and humidities, they don't realize that throttle ice can happen on the ground during taxi," Walton added.

Another good way to help pinpoint the likelihood of carb ice is by using a carburetor temperature gauge. They are usually color-coded with yellow indicating the temperatures where icing may occur. If you have one, be sure to include it in your instrument scan.

Bring the Heat!

So, what's the best course of action for combatting carb ice? Carb heat of course. In most airplanes, when you pull the carb heat knob, a flapper door opens and the engine pulls warm air through a heat exchanger that surrounds your exhaust system. Carb heat use will cause the engine to have a slight loss in power due to the warmer and less dense intake air. If there is carb ice present, you may also notice the engine running rough before eventually smoothing out. This may last from 30 seconds to several minutes depending on the severity of the icing.

The key to carb heat effectiveness is knowing when and for how long you use it. Use it too late (i.e., after a significant amount of ice has accumulated) or too briefly, and you may not have enough heat available to melt the ice. Sometimes descending to a lower altitude where the air is warmer works, but the terrain has to allow for that.

Pilots should consult the airplane flight manual or pilot's operating handbook (POH) for specific instructions on carb heat use, but a best practice is to use carb heat during low-power operations like descents and during landing, as well as when carb icing symptoms exist.

Master instructor and designated pilot examiner Doug Stewart is a proponent of this advice but makes it a point to stress the need for carb heat *before* reducing power. "During checkrides, I might only see one out of ten pilots pull the carb heat before beginning a descent to land," notes Stewart.

There's an increased likelihood of carb ice during certain low-power configurations like descents and idling on the ground.

For Stewart, timing is everything too. "When a carbureted engine quits due to carb ice, the longer you wait to apply heat, the less chance there is of getting that engine running again." He adds that waiting to run through your checklist might be too late as the residual heat from the exhaust system may already be gone. Bottom line: if you suspect carb icing, particularly if you're within the sweet spot for temperature and humidity, use carb heat.

Is There a Downside to Using Carb Heat?

Since carb heat usually brings unfiltered air into the engine, there is concern among pilots that its use may cause damage to the engine. Pilots should exercise caution and limit the use of carb heat in extremely dusty areas, or where there may be volcanic ash present.

Another concern is the degraded climb performance when performing a go-around with the carb heat left on. Pilots should be aware of this, particularly when certain atmospheric conditions may require all available power to arrest a descent. It's best to follow the procedures stated for carb heat use in the aircraft's POH. Just remember that not using carb heat when required for a power-off or low-power descent for landing could result in carb ice and restrict your engine's ability to develop full power on a go-around.

Troubleshooting Tips

Ensuring you're prepared for any icing of the induction kind means checking the carb heat system before you fly. When pressed for time, resist the urge to speed through your instrument checks on run-up. Instead, take the time to carefully record the appropriate rpm drops when carb heat is applied.

If you're not seeing a significant rpm drop, the system could be leaking, or your cable could be broken. Leaky air boxes are common. When it comes to how much of a drop you should expect to see, the manual is the best place to look. It's common to expect a drop between 75 and 150 rpm. Any less might be worth a discussion with your mechanic.

There are plenty more resources on this subject, so be sure to check out some of the links in the Learn More section below. *Being prepared is the key to keeping your carburetor ice-free!*

Learn More

- FAA AC 20–113, *Preventing Engine Induction System Problems*
- FAA SAIB CE-09–35, *Carburetor Icing Prevention*
- FAA *Pilot's Handbook of Aeronautical Knowledge*, Chapter 7, Aircraft Systems
- FAA Safety Team's *Winter Flying Tips*
- NTSB Safety Alert 029, *Engine Power Loss Due to Carburetor Icing* (PDF download)
- "Bring the Heat," *FAA Safety Briefing*, Jan/Feb 2017
- AOPA Safety Brief, *Combatting Carb Ice*

The Wright Answers

See page 6 for answer

When the brothers were youngsters in 1878, their father returned home one evening with a gift, what was it?

A . A set of tools B. A model airplane

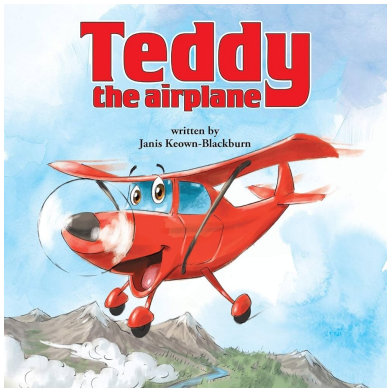
C. A book about bicycles D. A model helicopter

The Footlocker by Allen Fawcett

Picture yourself as PIC, cruising along at FL350. For most of us, writing a children's book about an airplane named 'Teddy' is the furthest thing from our minds. But Captain Janis is different. Deep within, she has a personal story to tell that she hopes will inspire others to follow in her footsteps. She picks up a pen and starts to write. Her memories include looking up at airplanes on Wings Field when she was four or five years old. Then came the Powder Puff Derby with take offs from KACY. That's when she first uttered the magic words: *I WANT TO DO THAT!* Captain Janis is Janis Keown-Blackburn, MAFC Board Member and New Jersey Aviation Hall of Fame inductee.

But wait, authoring a cute little story is one thing, but turning it into a children's book at Barnes and Nobel takes years. Fortunately, her friend Jose Pardo, is an illustrator for Disney and Universal Studios. He can sketch and paint anything, including a red Cessna 150 named Teddy. For Captain Janis, drafting her story was the easy part. Talking Jose into illustrating a children's book was the challenge. But once completed, it was off to the printer and, *BINGO!* 'Teddy, the Airplane' was born.

So, what is Teddy's story? Teddy does not go very fast, or likes to fly very high, or to spin. And when Cathy, one of the bigger airplanes on the field, brags about taking her pilot to lunch in a different state, it makes Teddy feel small. Then the fastest airplane, a jet named Larry, tops Cathy's story by flying a family cross-country to California. Teddy wonders, "Am I missing something?"



Teddy closes his eyes and dreams about flying above rivers and mountains and lakes and fields. He dreams about flying far and wide. But dreaming only makes Teddy grow sad. Teddy does not get to fly very far from the field. He wonders if he is even a real airplane. Suddenly, all the other airplanes team up and shout, *"YES! You are a training airplane. The most important airplane of all."* Teddy gulps and smiles with pride. He feels like one of the big airplanes now.

The moral of the story? Captain Janis explains: "Even if you are the smallest airplane on the flight line, you are still important. To become a pilot, everyone has to learn to fly you, first." No matter how big the airplane is, everyone has to get to learn what Teddy can do.

How did Teddy get his name? "It's a children's book and kids play w/ teddy bears, so I wanted to go along w/ that theme. Small and cute. He is smaller than the other airplanes, almost childlike compared to the bigger, faster aircraft."

As Einstein once said: "If you cannot explain it to a six-year-old, you do not understand it yourself." If you ever have the good fortune to fly with Captain Janis and her 23,000 logged hours, there will be no doubt in your mind. Captain Janis understands. Happy Landings, Teddy!

Author's note: "Teddy, the Airplane" makes a perfect stocking stuffer for children from babies to six years. It is available in hard copy and E-book on Amazon.com, but to find it, you must search using Janis' name, not the book title. You can also try Barnes & Nobel. I recommend the printed copy. The illustrations are rich and inviting. I'll bet Janis will even autograph it for you.

NIKE Site Tour

On November 12, a group of MAFC members met at the gates to the NIKE Missile site located on Sandy Hook. This semi-restored area was once the nerve center for a chain of missile batteries that guarded the New York Harbor. All of the presenters were former military people who were actually involved with these batteries. Our group was then shepherded around several building that were either restorations or set up as teaching areas. The docents were remarkably well versed and eager to answer questions about the once super secrete operation.

The actual missile launching site that was once part of a chain of locations is located south of this area and sadly is no longer open to the public. Hurricane Sandy flooded the underground storage area and the damage was so severe that it cannot be restored.

If you wish to learn more about this technology see: www.youtube.com/watch?v=sX6n0oFXR8Y and www.youtube.com/watch?v=tjkckMotBgY. To find out about the tours, go to ny56nike.weebly.com/

Guide To Becoming A Commercial Pilot : Which Airline Is Good For You?

by Matt D'Angelo (A multipart series #4)

Hey aviators and future aviators! After hearing about how amazing the airline industry is for pilots at this point in time, you may be considering a new career! Excellent! We'll start getting into the details of setting yourself for success with your airline career in upcoming articles, but first, it's time to start thinking about which airlines you would most like to work for. Being specific with your goal (choosing which airline you would like to be a pilot for vs. simply wanting to become an airline pilot) will help get you on the right path, even if you're just beginning to learn to fly.

Quality of life and compensation-wise, seniority is key with the airlines. So, the longer you stay with one company, the better, if you have chosen wisely in the first place! You may never live the airline life you've imagined if the company you work for isn't a good fit.

What's a good fit? Like in the non-flying world, airlines are companies made of people, culture, leaders and a certain feel which will affect your day-to-day life. If your values and lifestyle aren't in line with your employer, you won't enjoy it nearly as much as you could and you won't reach your full potential success or happiness.

So, how do you know which airline to go with? Start with the end in mind. If you want to fly for the majors, think about which few majors are your top choices. Research a lot of them, not just the ones you think you want to fly for right now. Consider the following points during your research:

Location: The first thing I would look into is where each airline's crew bases are located vs. where you would like to live. While this can change on your end and theirs, try and set yourself up so you live relatively close (within an hour is ideal) to your crew base, so you're not commuting via airline to get to work. From the many experienced airline pilots I've spoken with, living close to base is one of the biggest keys to happiness. Many of the majors have numerous hubs, so you will have options. Keep in mind, some of the bases are more desirable than others, so you'll need some seniority in many cases to end up exactly where you want to live.

Culture: Are your values lined up with the company's? Do the folks working for them seem like people you would want to work with, hang out with, have coffee with? While every team member, flight crew and otherwise, should be professional, there are many different ways to approach it. Think about the third and fourth-largest airlines in the United States (based on passengers flown), Southwest and United. If you've flown both of these airlines, or have researched them, you'll know how different they are culture-wise. As you start learning about Southwest founder Herb Kelleher (I highly recommend the book,"Nuts!", by Jackie and Kevin Freiberg), you'll quickly realize how different the airline he created is from United and most of the others! The best ways to figure out a good fit culture-wise are to speak with pilots who fly for airlines you are interested in and to research those airlines.

Growth and Stability: Things change, but often a long track record, a content team, great leaders and reasonable, responsible growth are decent indicators of a company's health. You can fairly easily research how much growth is expected by looking at planned aircraft acquisition, pilot hiring and base expansion. To determine relative stability, have a look at the airline's history, track record, stock trend over time and leadership changes.

Compensation: Most of the majors have excellent compensation, in the form of salary and benefits. For United States carriers, a few of the best out there in terms of compensation currently are cargo carriers FedEx and UPS. They both have outstanding compensation, but are also some of the most competitive airline jobs to get. Go for it if they seem like a good fit, but keep in mind the path to them will take longer as you will need much more experience to be interviewed with them than some of the others. United, American, Delta and Southwest also top the compensation list at the moment.

Routes: Do you eventually want to fly "across the pond" internationally and do just a few long trips per month, do you imagine yourself doing shorter flights within the United States, or a combination of these? Look at the route maps for different airlines and find a good fit for you. Remember, to end up with the routes you want most will take time and seniority, but that will happen more quickly than you think!
Aircraft: Some pilots just want to fly and aren't as concerned with which exact aircraft they are assigned. Others are "Boeing" or "Airbus" people and want to fly only that metal, sometimes only specific types. This usually isn't a big deciding factor, but it's something to consider.

The most important tips when deciding which airline is a good fit for you are: - speak with other pilots - do your research- keep an open mind and several options- start with the end in mind

This will take time and you may end up changing your mind in the future. That's okay - be flexible! Speaking with pilots is key. If you are interested in an airline, speak with several pilots with various experience levels who fly for them or have in the past.

Once you determine which airlines seem like a good fit, start looking at which regional airlines have relationships with them. Many regionals move pilots into partner major airlines. Some do this without even requiring an additional interview. This is called a “flow” arrangement and is the easiest and lowest friction, but you may spend an extra year or two with the regionals. Ideally, plan on working for a regional airline which has the best chance of success to get you to the major airline of your choosing, even if the regional isn’t a perfect fit. I recommend making this sacrifice for a few years early in your career so you end up in your most ideal position down the road.

The Wright Answers:

D. A model helicopter

ANNOUNCEMENTS

Overheard ATC Conversations

It was a really nice day, right about dusk, and a Piper Malibu was being vectored into a long line of airliners in order to land at Kansas City.

KC Approach: "Malibu three-two Charlie, you're following a 727, one o'clock and three miles."
Three-two Charlie: "We've got him. We'll follow him."
KC Approach: "Delta 105, your traffic to follow is a Malibu, eleven o'clock and three miles. Do you have that traffic?"
Delta 105 (in a thick southern drawl, after a long pause): "Well...I've got something down there. Can't quite tell if it's a Malibu or a Chevelle."

Congratulations

David Shields is our newest CFI

Welcome NEW MEMBERS!

Chris Chapman
Peter Swetits
Raymond Cheng
Thomas Cherian

Appointments

Dinse Skinner
New newsletter staff

Top Flyers in October

PILOT	*HOURS FLOWN*	*AIRCRAFT*
Michael Siniakin	**11.8**	**N738NY, N55804**
Yechiel Benedikt	**10.9**	**N268BG**
Marino Santos	**9.3**	**N738NY, N268BG**
David Shields	**9.0**	**N93KK, N738NY**
Emily Johnson	**6.8**	**N93KK, N738NY, N55804**

Takeoffs are optional but landings are mandatory

Greenwood Lake 4N1

Awesome Paint Jobs