

Those were the days  
- Cape Smythe in the  
1990s

*Photo courtesy Colleen  
Mondor*



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# Some thoughts on winter flying and icing

by John Mahany

Winter flying...Brrrr!! IF one is prepared for flying in cold weather and all that goes with it, then it can be uneventful. But, if one is not prepared, it may not go so well and things can happen. When the mercury drops into single digits, it's time for a quick refresher. Cold weather slows everything down, things get brittle and break. Because people and things move slower when it's cold, you have to allow more time, ample time. And some people adapt to the cold better than others.

First, pilots and passengers need to dress properly, in layers. A cold pilot will tend to rush the preflight, rush to load the airplane, and not allow enough time before taking off, while the airplane and its components might well still be frozen! (Frozen gyros come to mind.) And how many airports have heated hangars? Aside from large airports found in big cities, not many.

When I flew the DHC-2 Beaver some years ago (late '90's), for the CAP's Kenai Squadron, with its P&W R-985 radial engine, there were cold weather temperature limitations for the engine oil for starting, taxi, run up and takeoff. So, after starting, we would sit and idle waiting for the big radial engine and its 5 gallons(?) of oil to warm up before we could taxi and run up. Question: What are the cold weather operating limitations for the airplane you fly?

It goes without saying, but I will say it anyway, don't takeoff with any snow, ice or frost adhering to the wings or tail. It's called the 'clean wing' concept. Guess what? Snow, even dry snow, will not blow off the wing during takeoff. Ice, snow and frost directly affect the airflow over the boundary layer of the wing, with the result being separation of the airflow which leads to an aerodynamic stall. And there is not enough altitude for recovery. This is mentioned in the Pilots Handbook of Aeronautical Knowledge (PHAK), Chapter 5: Aerodynamics of Flight.

When it comes to icing—ice should scare you! Be careful! Every icing encounter is different and just because one aircraft makes it through an area of known icing does not mean you will. It depends on several variables like a particular

aircraft's airfoil shape, the speed and altitude. Some aircraft (turbine & turbo-prop) may have a minimum speed for flight in icing conditions. Also, laminar flow wings are different than non-laminar flow wings with regard to icing conditions. So, know what you are flying, and what if any icing criteria/limitations apply. Plan your flight accordingly and refer to the AFM or POH.

And yes, some airplanes tolerate ice better than others. But ALWAYS have an escape route in mind; higher, lower, or even behind you. It all depends on the particular weather system (cold/warm/occluded/stationary front) that you are encountering. What kind of terrain are you flying over? How high or low is it? What are your options?

Even jets can only handle so much ice. Aircraft are only certified for light or moderate icing encounters. No aircraft is certified for flight into severe ice, where the rate of accumulation exceeds the rate at which it can be shed. And speaking of icing, PIREPS are critical for dealing with icing. If you do encounter any icing, please pass along a PIREP to ATC (on the frequency) or Lockheed-Martin with what you encountered, immediately, so other pilots hear about it, now!

For more information on icing conditions, I highly recommend two books: **Severe Weather Flying**, by Dennis Newton, and **Professional Pilot, 3<sup>rd</sup> Edition**, by John Lowery. Both are available [through ASA](#) and in e book format. . Also, **Weather Flying**, by the late Capt. Robert N. Buck is another aviation classic with a lot of good information on flying in all kinds of weather. Highly recommended.

Fly safely!

John

*John Mahany has been flying for 30+ years. He is an ATP/CE-500 and an MCFI in southern California, with corporate, airline and charter experience. He spent 4 ½ years flying in Alaska. He is currently a King Air and Citation Instructor at FlightSafety International in Long Beach, CA. He flies a 1953 CE 180 for fun!*

# An in-depth look at icing

by Jim Robinson

With the longer winter days there are more opportunities to get out and do some winter flying. The time to review your winter flying procedures, survival gear, hydration, flat light etc., is before you fly. This article is a review of aircraft icing, specifically aircraft that are not certified to fly into known icing.

The following quote is from Jerome Lederer, Director of Safety, Civil Aeronautics Board: *“Strange as it may seem, a very light coating of snow or ice, light enough to be hardly visible, will have tremendous effect on reducing the performance of a modern airplane”* It is interesting to note this quote is from 1939. Almost 80 years ago it was a well known fact that if ice is adhering to the aircraft it has an extremely detrimental effect on aircraft performance.

Convention has it that any safety related article must begin with a Federal Aviation Regulation. So in keeping with convention, FAR 91.527 states “that no pilot may take off an airplane that has frost, ice, or snow adhering... (essentially any part of the airplane)”. In plain language the pilot must ensure that the aircraft is completely “clean” no contaminants on any part of the airplane. It’s interesting to note that FAR 91 does not specify how the pilot removes the contaminants.

The pilot should use all available weather resources to avoid flight into icing conditions. In general there are three types of in-flight icing, clear, rime and mixed. It is beyond the scope of this article to talk about the various hazards and conditions related to the types of icing; suffice to say avoid flying with ice on your airplane. In the event inadvertent icing is encountered in-flight, the pilot should take appropriate action to immediately exit the icing conditions. In some cases you may be able to climb out of the icing into warmer air or get on top of the icing conditions. Climbing to exit the icing can be problematic if not done quickly, however. Most likely descending is the best option but imagine being over terrain that is not conducive to descending. If appropriate, consider declaring an emergency with ATC if you need to execute an emergency descent.

Why is icing so incredibly dangerous to aircraft? Ice not only adds weight, it more importantly changes the flight characteristics in a negative manner. A small amount of rough ice on the airfoil may be more detrimental than a much larger coating of smooth or clear ice and either way, lift is significantly reduced. On takeoff (because you didn’t clean the airplane off) is a really bad time to find out you don’t have sufficient lift. Cruise flight may mask the detrimental effects of icing but while slowing down for landing the angle of attack is increased. This is a very dangerous phase of flight as the iced up airplane may quickly exceed its critical angle of attack leading to an unrecoverable stall. In essence, ice on the airplane may mask dangerous flight control problems until it is too late. Many POHs suggest flying a faster indicated airspeed if ice has accumulated on the aircraft.

Not only must the pilot be concerned with wing icing, tailplane icing is an important consideration. The tailplane is thinner than the wing and is often a more efficient collector of ice. Since the tailplane for the most part is not visible to the pilot, it is difficult to detect how much ice accumulates there. In combination with center of gravity and center of lift, an iced-up tailplane may stall causing a sudden and dramatic pitch over. If tailplane icing is suspected or has occurred, some POHs suggest not only a faster approach speed, but also landing with flaps up.

Taking off with any ice adhering to the aircraft is not only against the FARs, it can have an extremely detrimental effect on aircraft performance so use all available weather resources to avoid flying into icing conditions. If they are encountered, have an escape plan. The FAA and AOPA are good sources for information, in particular AC No: 91-74B has a very detailed discussion on weather and aircraft performance. Icing is a fact of life in winter and climate change is only going to increase the likelihood and severity of it (ICAO).

*Jim Robinson is a retired military aviator who has also flown corporate, airline and general aviation. He currently flies and maintains a Cessna and lives in Anchorage.*

# 15 years later, How RSIA Changed the Alaska Aviation Industry

by Colleen Mondor

In August 2002, Senator Ted Stevens shepherded a new law through Congress that brought massive changes to Alaska's bush mail system. The Rural Service Improvement Act (RSIA) radically altered how mail was distributed to air carriers throughout Alaska. In the ensuing years, multiple airlines have gone out of business, competition has been drastically reduced in many villages and the state's largest commuter operator continues to be plagued by troubling, preventable crashes. RSIA's part in all this is difficult to measure, but understanding commercial aviation in the state today demands that it not be ignored.

Since Ben Eielson flew the first limited mail contract in 1924, the postal service and aviation have been uniquely intertwined in the Last Frontier. With mandatory delivery times attached to all mail from the very beginning, the power wielded by the U.S. Postal Service on scheduled carriers in Alaska has been extreme. Diaries and surveys of air carrier pilots in the past are rife with examples of postal employees mandating flights be conducted regardless of weather conditions. If a company refused or was incapable of flying within the required amount of time, the post office always had the power to transfer the mail to a company that would.

Despite the pressure, carriers have historically based their schedules on existing mail routes as the financial rewards for delivery are so great. In pursuit of these dollars some carriers hire inexperienced pilots and fly in marginal conditions, resulting in tragedy. One of the goals for RSIA, which was also written to reduce postal service expenditures, was to increase passengers flying on FAR Part 121 airlines, which fly larger aircraft and have more stringent operational rules than the smaller Far Part 135 carriers and are thus traditionally perceived as safer. To accomplish this goal RSIA forced a transformation of how mail service is provided from the hubs to the villages. Rather than the equitable mail split between all scheduled carriers for a destination that existed in the past, (regardless of aircraft size or cargo vs. passenger preference), in the post-RSIA world 75% of the mail went to scheduled passenger carriers and 25% was split between cargo carriers. (Initially it was a 70/20 and 10% to "other qualified carriers" split, but this phased out by 2005.) As passengers and baggage are always loaded first, the new passenger airline

preference resulted in the majority of the mail being dispatched to carriers often least capable of transporting it. This resulted in a higher percentage of mail not being delivered on time and often having to be transferred, perhaps days later, to all-cargo carriers.

Further, RSIA stipulated that a company must have at least 20% of the scheduled passenger traffic for a route to qualify as a "passenger carrier" for mail dispatch and, finally, that if an air carrier operating under Part 121 was scheduled on a route then any smaller Part 135 passenger companies on the same route were required to obtain a Part 121 certificate or see their mail rate reduced. (This process takes years and costs several million dollars.) Finally, if 135 carriers competing with 121s did not upgrade by November 2008, they were to lose mail for those routes. This non-equitable distribution system would usher in a new era of safety according to Stevens, what it actually did was end bush air transport as everyone knew it.

"We lost our business of 50 years over RSIA," said Don Olson in a 2006 interview with the *Alaska Journal of Commerce*. "We couldn't hold on to the mail because we had less than 20 percent of the passenger market on the Seward Peninsula." A 2006 series of amendments to RSIA reduced the 20% passenger rule to 10% and removed the Part 121 transition requirement, but for many companies the damage was done. In his 2014 testimony before the House Committee on Oversight and Government Reform, Steve Deaton, a retired network specialist for the postal service in Anchorage, highlighted the staggering shakeup to the aviation industry in RSIA's wake:

"Prior to the Rural Service Improvement Act, there were as many as 35 air carriers," he said. "The Rural Service Improvement Act came in, was enacted to protect the passenger-freight service, and it's done its job. There are now nine Bypass bush carriers left carrying mail in the State."

Between the companies that went completely out of business and those that dropped scheduled service and became charter-only operators, a glaring lack of competition in some areas was soon established. Slowly, the state witnessed the rise of a single air group, first known as Era Alaska and now Ravn,

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# From the AASF President *Twelve Deadly Sins Series:* *Your Inadequate Personal Protective Equipment*

Dear Members:

Happy New Year & welcome to the first newsletter of 2018!

Personal Protective Equipment covers a lot of area, from helmets to shoulder harness to gloves and boots. But this time of year it surely covers lifesaving winter gear. Flying in Alaska can be challenging and the risks can be high. But surviving in Alaska after an aircraft crash can be done if the pilot has the right survival equipment on board. And it starts with the clothing on your back.

If you have the right clothes and you survive the crash you can have a pretty good chance of living long enough to be rescued. If on the other hand you aren't dressed to spend the night you probably will freeze to death. We've all heard the maxim what you have on your body is survival equipment and what you have in the airplane may be camping gear. What you have on your body obviously includes your clothes from top to bottom. It also includes what you have in your pockets or survival vest. If you have the right clothes on and you have the materials (in your vest/pockets) to start a fire you have a pretty good chance of surviving. Some of the minimum items to carry on your person include:

- Waterproof matches, or some means of starting a fire.
- Means of communicating, or letting someone know you are in need of rescue.
- A signaling device, such as a mirror, flares, or rescue laser light to aid rescuers in locating you.
- A space blanket is inexpensive, lightweight, and can be used to help rescuers locate you.

You also probably know the maxims about clothing:

- "Cotton Kills" which means cotton can get wet (through perspiration or other) and it stays wet. Hyperthermia sets in, and you die. Rather than cotton choose wool. (Keep in

mind that polyesters can burn or melt on your skin in case of fire.)

- "Dress in layers" The layer next to your skin should be able to wick moisture away. The next layer for warmth. The top layer warmth and water repellent.
- "Cover your head to warm your toes". Good warm headgear is crucial. Face masks are important to have along also.
- "Mittens or gauntlets are warmer than gloves". Fingers freeze if they are isolated.
- Leather boots are generally not good insulators in really cold weather. Wear a pair of boots that are insulated and waterproof.

All of this is great advice, but if you refuse to believe you are vulnerable to the unthinkable and you walk out to your airplane in what you wore to the office you are looking for trouble. Just ask yourself, could I survive if I had to spend the night in what I am wearing?

When I was stationed at Eielson Air Force Base flying the A-10 we occasionally would do a little test. At random we would pick someone who was on the flying schedule and intercept them as they were walking to their jet. Instead of flying that day they were transported to the back part of the base given what they had in their survival kit and what they had on their back. The truck came back to pick them up in the morning. We didn't have any problem getting pilots to dress appropriately after that.

Before you try this "test" yourself or with your buddies make sure you have a safety net and good communication with the "survivor" in case things get rough and he/she admits to being poorly prepared and needs to be picked up and taken home before the night is over.

***Fly Safe!***

***Harry***

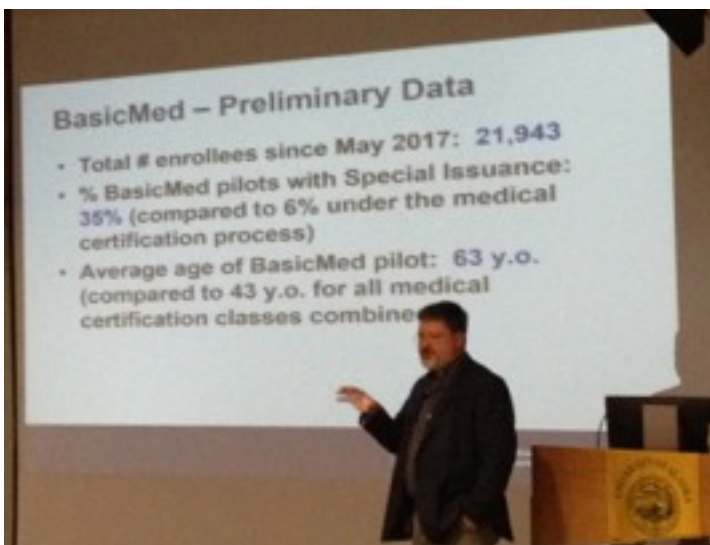
# Report on the Fall Safety Seminar

The Safety Foundation's annual Fall Safety Seminar was held at UAA's Aviation Technology Building on November 15<sup>th</sup>. Approximately 70 people were there to enhance their knowledge of aviation safety practices and principles. Some of the highlights of the day included an informational presentation by Dr. Gary Hufford about the research and new products being developed by the National Weather Service for aviators in Alaska, an engaging talk by Cliff Stockton on winter maintenance tips, and an update on Basic Med and aeronautical medical guidelines by Dr. Marcel Dionne.

The day ended with a motivating presentation by Marshall Severson and Danny Billman about their adventure to Provideniya. Their efforts in flight planning and emergency preparedness were thorough and a great example of the right way to organize a long cross country trip.

Rocky Capozzi has done a fantastic job arranging this seminar and Mike Workman helped make the audio-visuals flow smoothly. Avemco's support allowed us to start the day off with coffee and snacks, and Alpha Eta Rho provided a tasty lunch as usual. We especially thank Avemco and Stoddards Aircraft Parts Center for their continued support and the great door prizes.

The Alaskan Aviation Safety Foundation would also like to thank the presenters and volunteers, and the members of the Alaskan Aviation Safety Foundation whose support makes these seminars possible. If you would like to be involved in planning for our next seminar, the 33<sup>rd</sup> Annual Seaplane Safety Seminar, or if you have ideas for topics or presenters, please contact us at [aasfonline@gmail.com](mailto:aasfonline@gmail.com), or 907-243-7237.



# Congratulations to AASF member John Mahany!

Master Instructors LLC takes great pride in announcing a significant aviation accomplishment on the part of John S Mahany, a Los Angeles area flight instructor and a resident of Long Beach, California.

Recently, John's accreditation as a Master CFI was renewed by Master Instructors LLC, the international accrediting authority for the six Master Instructor designations as well as the industry acclaimed and FAA-approved "Master Instructor Continuing Education Program". He first earned this national professional accreditation in 2003 and is one of only 40 worldwide to earn one or more of these credentials six (6) times.

To help put these achievements in their proper perspective, there are approximately 101,000 CFIs in the United States. Fewer than 800 of them have achieved that distinction thus far. Twenty-three of the last National Flight Instructors of the Year, National FAASTeam Representatives of the Year, or National AMTs of the Year were Masters while John is one of only 56 California aviation educators to earn one or more of these prestigious "Master" titles.

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which dominates the market as no other company has in Alaskan history. Ravn includes not only its three original companies, Frontier Flying Service, Hageland Aviation Services and Era Aviation, but also the remnants of three other airlines that were purchased or merged and no longer exist as they once did: Cape Smythe Air Services, Arctic Circle Air and, most recently, Yute Air. In many places, Ravn is now the sole scheduled operator.

There is no question that it is comparatively safer to fly on a small air tax or commuter in Alaska today than it was twenty-five years ago. If RSIA's impact could be tied directly to fewer small commuter accidents in the state, than it would easily be considered a grand success, regardless of any negative impact on competition or mail delivery. But

at the same time RSIA was passed, advanced navigational technology became more common among operators, the FAA embarked on a huge expansion of its weather camera program in the state and the Alaska Air Carriers Association established the Medallion Safety Foundation. With so many safety-related measures forming concurrently, it is frankly impossible to access the success of any one of them without considering the others. To suggest otherwise is outright folly or willful ignorance.

It is irrefutable however that RSIA was the single greatest catalyst upon Alaska commercial aviation since Eielson flew that first contract between Fairbanks and McGrath nearly 100 years ago. No discussion of the state's air carrier industry can fail to consider this transformative, and still controversial, act.

## Alaskan Aviation Safety Foundation

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