



Tailwinds Flying Partnership

January 30, 2012

2012 Winter Safety Session Notes

Date: 21 JAN 2012

By: Curt Keller

1. Notes from Mark Weyer
 - a. IFR Ground School scheduled for February
 - b. Cirrus annual will be done after Six is completed - March time frame
2. Winter safety case studies and online courses
 - a. good for understanding what not to get yourself into
 - b. AOPA Safety Institute case studies
 - i. "Airframe Icing"
 - ii. "Cross Country Crisis"
 - c. AOPA Safety Institute interactive, online courses - use them!
 - i. "Precipitation & Icing"
 - ii. "Ceiling and Visibility"
 - iii. "Air Masses & Fronts"
 - iv. "Cockpit Weather"
 - d. Websites
 - i. AOPA Air Safety Institute Cold Weather Resources
<http://www.aopa.org/asf/hotspot/winterwx.html>
 - ii. AOPA Air Safety Institute Weather Wise Precipitation and Icing
http://flash.aopa.org/asf/wxwise_precip/
 - iii. COPA - Cirrus Owners & Pilots Association <http://www.cirruspilots.org>
Sign in using Tailwind's username and password
3. Tailwinds presenters - Eric Broderson and Mark Shanahan
4. Mark Shanahan's presentation - Avoid Icing
 - a. Have a plan
 - i. preflight planning - have a plan B
 1. prepare to follow immediately in the event of an emergency
 - ii. deice, frost / snow removal, check control links for ice/water
 - iii. Flight operations have published limitations and procedures
 1. Check POH for aircraft limitations - all Tailwinds planes have a different set of rules
 - iv. the rules are set and then FOLLOWED!
 - b. Get out when icing starts - think about the American Eagle ATR in Indiana!
 - i. Jet airlines have lots of de-icing gear
 - ii. None of Tailwind's airplanes are certified for flight in known icing
 1. In the event you fly into icing and accumulate ice - declare an emergency
 - a. ATC can get you to the nearest airport and provide vectoring
 - b. Being proactive viewed more favorably in the event of an incident/accident
 - c. Less material for prosecuting attorneys to use against you



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- iii. Airline captains listen to radio communications from tower and other pilots
 - 1. In landing pattern - many wait until one plane makes a successful attempt then others will follow
 - 2. Will wait until one plane takes off before committing to departing from the gate
- iv. Check conditions at both airport of departure and arrival
 - 1. Snow drifts - ice on runway and/or taxiway
 - a. Mark Weyer added that the Cirrus has a lower wing profile
 - i. consider before taxiing and takeoff/arrival
 - b. Verify POH for landing performance on wet/icy runways
 - 2. Runway lighting may be covered by heavy snow or snow banks
 - a. night landings without runway lighting
 - 3. Affects on braking action on runways with snow/ice
 - a. allow extra distance - increase landing distance minimum 15%
- v. Check and use pitot heat
 - 1. Watch airspeed - decrease is a good indication of blockage
- vi. Static port blockage
 - 1. Affects all pitot / static gauges
 - a. airspeed and altimeter read higher than normal - vertical speed indicator momentarily shows a climb
 - b. open alternate source
 - 2. Know where static ports are on the Cirrus, Six, and Archer
 - a. Cirrus has one port on each side of the fuselage
 - b. Six - Archer - Pitot/static both in Pitot tube
 - c. know where static air source valve is located
- c. Listen and request Pilot Reports (PIREPS)
 - i. Ask flight service for PIREPTS
 - 1. consider the type of aircraft reporting - A300 will report light / moderate icing - this would be severe for our airplanes
 - 2. Some turbo-props and most general aviation pilot reports useful
 - a. listen for planes ahead of you
 - 3. Ask ATC for weather conditions
 - a. better understanding of conditions in your flight area
 - b. if not too busy will comply with request - don't wait until the last minute to request
 - d. PIC has the final authority
 - i. Don't go if you feel unsure about weather conditions or your abilities
 - 1. Wife will be upset - Boss won't care
 - 2. first job is to make sure the passengers are safe
 - ii. If you find yourself in trouble
 - 1. ATC will request or deny a change in altitude - you have the final authority deviate if you feel in danger



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2. Don't hesitate to tell ATC that you cannot or will not comply - explain reason later if necessary - better to be alive and explaining what happened
5. Eric's Presentation
 - a. First and foremost "DON'T FLY OUR AIPLANES IN ICING CONDITIONS!!"
 - b. Sample flight from 21D to KMSN (Madison, WI), alternate - KDLL
 - c. Review weather days before planned departure
 - i. DUATS Surface analysis, radar returns, 12 Hr FCST
 - ii. Aviation Digital Data Service (ADDS)
 1. Metar's and FA's
 2. check forecast for arrival airport
 - iii. Wind speed aloft (low altitude - MSL)
 - iv. Freezing level chart
 1. Don't descend to above 0° C
 - v. Icing severity charts - 5000' MSL and 9000' MSL
 1. higher you fly - less moisture in the air
 - d. Check PIREPs
 - i. good weather - get PIREPs from flight service or device
 - ii. when in icing - ask CENTER
 - e. Give PIREPs they benefit everyone
 - i. Must say "I have a PIREP for you" for the report to get into the system
 - f. Know type and severity of ice
 - i. rime or clear
 - ii. trace, light, moderate, severe
 1. varies for type of aircraft reporting
 - g. Know where to look on Tailwind's planes
 - i. Six and Archer - temperature probe through windscreen
 - ii. Cirrus - must lean forward to see the leading edge of wing
 - iii. look at static electric displacement wire off flaps/aileron
 - h. Use the pitot heat and window defroster - make sure they are on
 - i. Alternate engine intake air and alternate pitot source
 - i. know how and when to use them
 - j. Accident Statistics
 - i. icing accounts for 12% of weather accidents
 - ii. Leading factors - induction icing 52% & structural icing 40%
 1. Rough running Carb. Heat on - leave on
 2. Cirrus and Six have fuel injection - use alternate engine intake air
 - iii. Pilot time - 48% had more than 1,000 hours
 - iv. Aircraft type - 64% single engine - fixed gear
 - k. Effects of ice on the plane
 - i. ice on the windshield
 1. can't see out - turn on the defroster
 2. Eric used his hand on the windshield to melt a spot to see forward
 3. side slip to see forward



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- ii. radio reception degraded
- iii. airspeed indicator drops to zero
 - 1. turn on the pitot heat
- l. Tail ice will cause a tail stall
 - i. sudden pitch down
 - ii. recovery - raise flaps
 - iii. pitch up (opposite of wing stall) and increase airspeed
- m. Prop accumulates ice
 - i. preserve thrust
- n. Where is ice
 - i. heaviest ice is often near the top of a cloud layer
 - ii. heavier when air is nearest to 0° C
 - iii. ahead of a cold front or rising over a mountain range
 - iv. usually localized - 20 miles and it is gone
 - v. don't have to be in clouds to collect ice
 - 1. rain in warm air over cold front will freeze on airframe as it drops through colder air
 - 2. moisture will accumulate on cold plane descending from colder temperatures
- o. In ice
 - i. fly the aircraft
 - ii. identify the problem
 - iii. understand the options
 - iv. execute plan B - immediately
 - 1. don't hesitate - more wait, more ice
 - 2. verify the conditions at your alternate
 - v. pitot heat / alternate engine air ON!
 - vi. night flight - have necessary equipment/documents on board
 - 1. flashlight
 - 2. charts
 - 3. airport facility directory
 - a. use GPS in any of the planes to access the airport information
 - b. frequencies available and can be switch from GPS
 - c. know how to use these functions!
 - vii. Turn up the defroster
 - viii. Contact ATC ask for other aircraft close and for their conditions
 - ix. don't descend below freezing level
 - x. between cloud layers? What are the tips and bases of the clouds
 - xi. weather behind is good - turn around!
- 6. Conclusion
 - a. Be prepared
 - i. plan ahead
 - ii. get weather briefing before flight
 - iii. verify conditions at both departure and arrival airport



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- b. Check aircraft performance charts - takeoff and landing distances
 - i. add 25% safety margin
 - ii. Have ice on plane during landing
 - 1. keep flaps up
 - 2. add power
 - iii. Is the runway long enough to land safely?
 - iv. fuel - plan on one hour fuel in tanks at arrival airport
 - v. Weight and Balance - always check you are in the margins
 - 1. Ice adds to weight - do you have a safety margin?
 - c. Survival
 - i. proper winter clothing and gear
 - 1. take heavy coat and winter boots
 - 2. is the FBO open - it gets cold waiting for a ride
 - ii. pack water and energy bars in flight bag
 - iii. are you prepared to walk to shelter in waist deep snow and in below freezing temps
 - d. Kit up for Winter flying
 - i. Survival kit information and lists - websites
 - 1. <http://www.preparedpilot.com/survival-kits/contents.htm>
 - 2. <http://www.redcross.org/services/hss/lifeline/fakit.html>
 - ii. more for flying in Alaska than here but has some good information even if you are just flying for that \$100 hamburger.
7. Final thoughts
- a. Flying in server cold is never a good idea
 - i. anytime temperatures are below -18° C (0° F) think twice about flying
 - ii. preheat cabin - cold temperatures are hard on gyro instruments
 - iii. electronic displays are affected by extreme cold
 - b. At the destination airport
 - i. plug in the engine heater - remember to take an extension cord - 100' min.
 - 1. hangar the plane - if available - heated even better
 - ii. allow additional time before departure to brush snow/frost from plane
 - iii. do you have a ice scraper
 - 1. check with Mark Weyer or Dave Becker for what type to use
 - 2. if the sun is out - ice will melt if you can wait
 - iv. let the engine and instruments warm up before taxiing / take-off
 - c. Check the Tailwind's website for "Out of Town Airplane Care" under the files and links page
8. End