PIREPS

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NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

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Aviation Heroes
Auburn Farington Field

By Penny Rafferty Hamilton, Ph.D.

In 1976, beautiful Auburn became a "Tree City USA" – one of Nebraska's first. Not many years later, native Nebraskan Fred E. "Bud" Farington, Jr. became the Auburn Municipal Airport Manager.

Born in 1920 in Falls City, Bud grew up in the Golden Age of Flight. In 1927, Charles Lindbergh united the world through aviation. In 1932, Amelia Earhart also flew solo from the United States to Europe. America's eyes were on the sky.

In 1942, at age 22, before the United States joined the Allies fighting in World War II, Bud earned his wings as a pilot in the British Royal Air Force (RAF). Patriotic flyer Farington later earned American Wings when he was commissioned as a Second Lieutenant in the U.S. Army Air Corps.

During World War II, Farington flew 65 combat missions in his P-51 Mustang. He instructed American pilots in that war and during the Korean Conflict. His military awards included the Air Medal with seven clusters, the European Theater ribbon with three stars, the Presidential Citation, and the American Theater ribbon.

Bud returned to Nebraska to operate an aerial agricultural application and flight school in Humboldt. In later years, he managed the Auburn airport and founded Auburn Flying Service, Inc., offering flight instruction and agricultural aviation services. Always interested in airplanes, in 1983, Bud constructed a beautiful home-built open-cockpit.

In 1990, the Nebraska Aviation Trades Association named him Airman of the Year. On October 16, 1993, Bud's home airport honored him by renaming K01, Farington Field. Fred Farington flew West in 1998. In 2000, he was inducted into the Nebraska Aviation Hall of Fame.

Bud Farington USAF pilot

Bud Farington Field

Farington Field Auburn NE chart

Dr. Hamilton is the author of the aviation career book, America's Amazing Airports. Connecting Communities to the World.

Flight in Icing Conditions

By David Morris

As we begin to move into the colder months of the year, every pilot should be intimately acquainted with the Federal Aviation Administration (FAA) Approved National Weather Service definitions for ice intensity and accumulation:

Trace - Ice becomes perceptible. Rate of accumulation slightly greater than rate of sublimation.

Light - The rate of accumulation may create a problem if flight is prolonged in this environment (over one hour). Occasional use of deicing/anti-icing equipment will prevent or remove accumulation.

Moderate - The rate of accumulation is such that even short encounters become potentially hazardous and use of deicing/anti-icing equipment, or diversion, is necessary.

Severe - The rate of accumulation is such that deicing/anti-icing equipment fails to reduce or control the hazard. Immediate diversion is necessary.

It is no longer unusual to find deicing and anti-icing equipment on a wide range of airplane sizes and types. Since the capability of this equipment varies, it becomes the pilot's primary responsibility to understand limitations which restrict the use of the airplane in icing conditions and the conditions which may exceed the systems capacity. Remember to carefully review the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual to ascertain the required operable equipment needed for flight in icing conditions and plan the flight accordingly. ■

Be Aware of Flutter

By David Morris

Flutter is a phenomenon that can occur when an aerodynamic surface begins vibrating. The energy to sustain the vibration is derived from airflow over the surface. The amplitude of the vibration can (1) decrease, if airspeed is reduced; (2) remain constant, if airspeed is held constant and no failures occur; or (3) increase to the point of self-destruction, especially if airspeed is high and/or is allowed to increase. Flutter can lead to an in-flight breakup of the aircraft.

Airplanes are designed so that flutter will not occur in the normal operating envelope of the airplane if the airplane is properly maintained. In the case of any airplane, decreasing the damping and stiffness of the structure or increasing the trailing edge weight of control surfaces will tend to cause flutter. If a combination of those factors is sufficient, flutter can occur within the normal operating envelope.

It is imperative that all airplanes receive a thorough preflight inspection. Further, owners should take their aircraft to maintenance personnel who have access to current technical publications and prior experience in properly maintaining that make and model of airplane. ■

Flight with One Engine Inoperative

By David Morris

When operating a multi-engine aircraft, safe flight with one engine inoperative requires an understanding of the basic aerodynamics involved, as well as proficiency in engine-inoperative procedures.

Loss of power from one engine affects both climb performance and controllability of twin-engine airplanes. Climb performance depends on an excess of power over that required for level flight. Loss of power from one engine obviously represents a 50% loss of power, but in virtually all twin-engine airplanes, climb performance is reduced by at least approximately 80%. Single-engine climb performance depends on four factors: airspeed, drag, power and weight.

Loss of power on one engine creates yaw due to asymmetric thrust. Yaw forces must be balanced with the rudder. Loss of power on one engine also reduces airflow over the wing. In addition, yaw affects the lift distribution over the wing causing a roll toward the inoperative engine. These roll forces may be balanced by banking slightly (up to 5 degrees) into the operating engine.

Airspeed is the key to safe single-engine operations. For most twin-engine aircraft there is:

Vmca - The airspeed below which directional control cannot be maintained.

Vsse - The airspeed below which an intentional engine cut should never be made.

Vyse - The airspeed that will give the best single-engine rate-of-climb (or the slowest loss of altitude).

Vxse - The airspeed that will give the steepest angle-of-climb with one engine inoperative.

The Pilot's Operating Handbook and FAA Approved Airplane Flight Manual contains charts that are used in calculating performance such as take-off ground roll, landing ground roll, accelerate stop and accelerate go speeds, single-engine service ceiling and single-engine climb rate.

Study your aircraft charts carefully. No airplane is capable of climbing on one engine under all weight, pressure altitude and temperature conditions. ■

The State of the Division of Aeronautics


Jeremy Borrell

As I type this article, I have had the pleasure of serving as the director of the Division of Aeronautics for just over four months. It has been an incredible four months, and I am as excited today as I was on my first day. One of my goals in this position is to ensure that we provide regular updates on the activities taking place within the Division. To that end, I would like to share my observations upon joining the team, what we have accomplished, and some of my initial goals.

The Division had remained relatively independent despite merging into the Department of Transportation in 2017. Two of the last remaining roadblocks to full integration were removed right as I joined the team. The Division transitioned from its office at the Lincoln Airport to a space within the Central Headquarters facility. While the team misses being surrounded by airport activities, the value of fully leveraging the available assets within NDOT cannot be overstated. One of the other catalysts for integration was the financial acknowledgment of the merger through the passage of LB138. NDOT has welcomed the Aeronautics team with open arms, and we are excited to continue our integration.

During this time, I have gotten the opportunity to get to know the incredible team that keeps things running smoothly within the Division of Aeronautics. Enough cannot be said about the time, energy, expertise, experience, and passion that they each bring to the table. They have persevered through a change in director, a facility move, and a significant staff shortage in the past months. Yet, they continue to meet the needs of our state system. One of our most significant challenges was our vacant positions. We have worked diligently to fill three of our seven vacancies, with a fourth hire likely to be confirmed before this is published. We have maintained a strong focus on finding qualified candidates who will fit the established team well and are excited about our success in this endeavor. We look forward to continuing this trend until we reach total capacity. Please continue to help us spread the word as we continue advertising our vacant positions.

Airport visits, an Aeronautics Commission meeting, the Four States Convention, and the National Association of State Aviation Officials Convention have all occurred since my start and have allowed me to build relationships with our external partners and peers nationwide. I look forward to visiting all 79 of Nebraska's public-use airports as time permits.

The team continues working diligently to complete the Nebraska State Aviation System Plan. The final chapters' revisions are being prepared and will then undergo final edits before being reviewed by the FAA. We look forward to being able to publish the finished product and begin broader utilization of the online system plan portal. We have also started to review and edit the state aid programs, including the Hangar and Fuel Loan Programs, to ensure that they will provide equitable and efficient use of the increased state funds available for allocation next year. We will work closely with the Aeronautics Commission to ensure that these programs meet their objectives and further our goals of advancing the aeronautics system of Nebraska.

Looking to the future, I am eager to find ways to become a more efficient organization by tracking and analyzing our performance. While the team does outstanding work, there is always room for improvement. We look forward to the development and conduct of educational programs for airports. To maximize our impact, we will also explore opportunities to build partnerships with additional state government entities, such as the Departments of Economic Development and Education. Additionally, we will focus on developing technologies, such as Uncrewed Aircraft Systems (UAS) and Advanced Air Mobility (AAM), to ensure that we adapt the organization to match the needs of the evolving system. The future of aviation is very bright and exciting.

As I wrap up this article, there are many other things that I look forward to sharing. I will continue to share updates during our commission meetings and encourage anyone with questions or concerns to contact the Division or Commission. Please also mark your calendars to attend the Nebraska Aviation Symposium on January 24th-25th. ■

OUR VISION

A dynamic aviation system which enhances quality of life through infrastructure and services that meet the diverse and evolving needs of all Nebraskans.

Fog. It's That Time of Year

By Mark A. Sheldon, University of Nebraska-Omaha, Aviation Institute

Radiation Fog: Taken 9/12/2023 between Ashland and Gretna, NE on Hwy 6. Visibility was down to 1/2SM for a bit in the Platte River Valley.

It's that time of year again. The nights are getting longer and the temperatures are cooling down. These are the perfect conditions for the formation of fog. So, let's talk about it.

To start with, let's define fog, and talk about how it forms. Fog is defined as a cloud that forms within 50 feet of the surface. It forms when the air has more moisture than it can hold. This can occur by either cooling the air, or by adding moisture to the air. Typically, forecasters will look for the potential formation of fog when the temperature/dew point spread is less than 5°F/2.7°C. Fog is more prevalent in the winter as we have longer nights, which allows for more cooling to occur and the greater possibility of reaching the conditions for fog formation.

Now we will turn our attention to the different types of fog. Radiation fog, is the one that occurs most frequently in the Midwest. Radiation fog forms on clear nights as the air temperature drops to the dew point temperature. Typically, the winds will be below 10 knots. Radiation fog can be very sneaky. You can be going along with great visibility, then bam, your visibility is down to zero. This is especially the case in low-lying areas that are near a moisture source. Radiation fog will dissipate as the sun rises and the air temperature starts to rise. Generally, you can expect this to occur around 9-10 a.m. Radiation fog can also dissipate if the winds speeds increase to above 10 knots. If the temperature is below freezing when the fog forms, freezing fog can occur. In this situation, the supercooled water droplets will freeze when they encounter an object. This will leave a very slick coating on the object called rime. icing. Although it can be very beautiful when trees are coated with it, it can be very dangerous to the flying community, as well as when driving your vehicle on it. When this occurs on the roadway, it is called black ice. The second type is upslope fog. This fog forms as moist air is forced up a slope. As the air rises, it cools until it reaches saturation. Upslope fog occurs frequently on the east side of the Rocky Mountains, so it does occur in Nebraska. The next time you see an easterly wind set up for a few days across the state, start watching the observations from west to east, and see the fog form. Most people don't realize that there is quite a difference in the elevation across our state, from the eastern part (Eppley Airfield's elevation is 984 feet), to the highest point in the west (Panorama Point in Bushnell, Nebraska, has an elevation of 5,424). That's 4,440 feet of change, which can lead to more than 8°C of cooling of the air. I am sure you all remember from your aviation weather class that in the standard atmosphere, air cools at 2°C per 1,000 feet of rise in altitude. Upslope fog will dissipate when the wind direction changes, and the air is no longer pushed up the slope.

Frontal fog is the next type we will talk about. Frontal fog (also known as precipitation fog) will form on

the cold side of a front as warm moist air lifts over the front creating precipitation that falls into the cold air, increasing the moisture content of the air. This can lead to very low ceilings and visibilities that can affect an extensive area, especially with warm, occluded, and stationary fronts.

Also, based on the temperature profile of the atmosphere, many different types of precipitation can occur. This is also an area where dangerous icing conditions can occur for the aviation community, as well for those of us on the ground. Frontal fog will dissipate with the passage of the front and its associated pressure system.

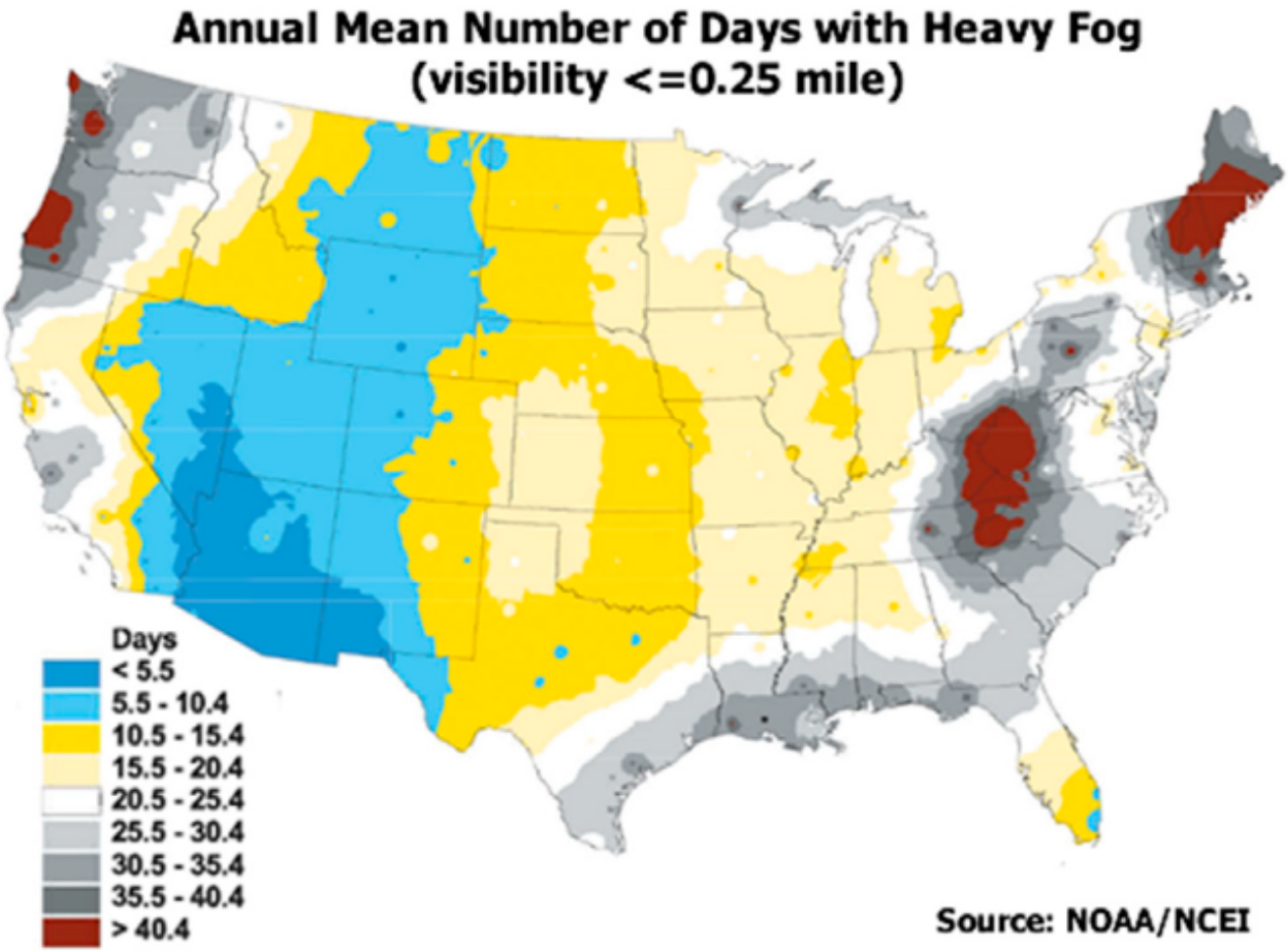
Steam fog is our next subject. This fog forms when very cold air moves over a warm water source. This causes the warm/moist air to be conducted into the cold air above. Generally, this condition is contained to the water sources and does not cause much of a hazard to aviation. Steam fog will dissipate as the temperature of the air increases. This fog is known to occur the most in the Great Lakes area, but it does occur in Nebraska when conditions are right.

Now, onto advection fog. This fog occurs when warm moist air moves over a colder surface. This phenomenon occurs most frequently along the West Coast of the U.S. as warm Pacific air moves over the colder waters along the coast. This is the fog that most people relate to occurring around the Golden Gate Bridge in San Francisco. Generally, we don't see this fog here in Nebraska. As with upslope fog, you will need to change the wind direction to dissipate this type of fog.

The last fog we will talk about is ice fog. This forms under the same basic conditions as radiation fog, except it mainly occurs in extremely cold arctic air, when the air temperature is -20°F or colder. This fog consists of ice crystals as opposed to water droplets. Although I won't say this does not occur here in Nebraska, it is really limited to the very cold areas of the world.

For most people, fog is fog, no matter what the visibility is. But for the aviation community, there are two different codes that are used in a weather observation or a forecast for fog. So, what exactly is the difference between fog (FG) and mist (BR)? It's all about visibility. FG is carried anytime the prevailing visibility is less than 5/8 Statute Miles (SM). When the visibility is 5/8 SM, but less than 7 SM, BR will be carried.

I hope this information has helped increase your understanding of fog. But more importantly, I hope it will assist you in your preflight decision-making process, and help you make the correct Go/No-Go Decision. Safe travels. ■



IFR and Non-Towered Airports

By David Moll

Not long ago I decided to reinstate my Certified Flight Instructor (CFI) certificate to help a friend's son get his private license. The first subject the examiner brought up was "IFR and Non-Towered Airport Operations." In response I brought up a reliever airport we both knew, also non-towered, that is very popular for corporate operators because of the lower cost of fuel and other services than the main airport. I've flown in there many times over the years and have seen procedures with both corporate operators and local general aviation operations that enhance the potential for a midair collision. I'm sure that is why the examiner wanted to discuss this topic.

The answer to the examiner's question is clearly stated below in AC-90-66(c).

". . .to mitigate the risk of a midair collision at a non-towered airport in other than instrument conditions, the Federal Aviation Administration (FAA) does not recommend that the pilot execute a straight-in approach for landing when there are other aircraft in the traffic pattern. The straight-in approach may cause a conflict with aircraft in the traffic pattern and on base to final and increase the risk of a midair collision.

8.2.1.1 Traffic pattern entry and turn direction information is provided by using the airport remarks or chart supplement, or by referring to the Aeronautical Information Manual (AIM) and the Pilot's Handbook of Aeronautical Knowledge (PHAK) or this Advisory Circular (AC). An aircraft in the traffic pattern of an airport is considered an aircraft approaching to land at the airport. At an airport without a control tower, the pilot must fly the traffic pattern with left turns, unless otherwise stated in the Airport Chart Supplement, or as stated on the visual flight rules (VFR) chart symbol for the respective airport. (Refer to § 91.126(b), the note below, and example.) That is, unless otherwise stated, all traffic pattern turns are to the left unless the airport designates that traffic pattern turns be made to the right."

I have been in the Fixed Base Operator (FBO) lobby at this same airport when one large jet corporate operator stated he will only do 5-mile straight in finals. Another told me his operations manual requires him to do straight in finals even if it's VFR. I take these comments as, traffic patterns are for others, not him. The FAA has addressed this in the above AC to minimize the potential of midairs by standardizing traffic pattern procedures when transitioning from Instrument Flight Rules (IFR) to Visual Flight Rules (VFR) as most corporate operations are. Am I bashing corporate jet operators? No, I have seven corporate jet type ratings and really like the position the FAA has taken for uncontrolled airports.

Are corporate operators the sole problem? Absolutely not! One day over the unicom frequency I heard a corporate jet pilot trying to convince an incoming general aviation pilot to enter the same left traffic pattern and land on the same runway he was setting up for. The response was: This is an uncontrolled airport and I'll land in any direction I want.

The problem is head-strong attitudes getting in the way of safety on both sides. One of the FBOs has been pushing for a control tower, or even a remote tower, to save costs and time. I've done my fair share of working with the owner and manager of the FBO on this issue, plus writing a letter (and emails) to the county commissioners and the airport manager on this issue. Thankfully a tower has been approved, so it's in process, just at the speed these projects take. ■

Relief for ADHD Applicants-

David Morris

There has been a recent change to the Federal Aviation Administration (FAA) policy regarding ADHD (attention-deficit hyperactivity disorder) that is published in the FAA Guide for Aviation Medical Examiners.

The new guidance identifies certain histories of ADHD and/or medication usage that previously required an extensive, expensive and time-consuming review process for applicants who reported the history on the FAA Application for Airman Medical Form 8500-8 (MedXpress).

This is the result of a comprehensive review of literature by the FAA as well as case history experience from the large number of applications submitted to the FAA over the past few years. The guidance also includes key documents to assist the applicant and the Aviation Medical Examiner (AME) in determining if a medical certificate can be issued at the time of examination rather than being deferred to the FAA.

With the new procedures in place, many applicants who meet the qualifications for the fast-track issuance will save thousands of dollars and many months of waiting for a response. This change represents the FAA's ongoing commitment to finding the proper balance between aviation safety and providing as many people as possible the opportunity to fly.

The process is bureaucratic, and it does take time and money in many situations, but persistence and patience hopefully will pay off in most cases. ■

Vertigo - Disorientation

By David Morris

Disorientation can occur in a variety of ways. During flight, inner-ear balancing mechanisms are subjected to varied forces not normally experienced on the ground. This, combined with a loss of outside visual reference, can cause vertigo. False interpretations (illusions) result and may confuse the pilot's conception of the altitude and position of the aircraft.

During Visual Flight Rules (VFR) conditions, the visual sense, using the horizon as a reference, can override the illusions. During low visibility conditions (night, fog, clouds, haze, etc.) the illusions predominate. Only through awareness of these illusions, and proficiency in instrument flight procedures, can an aircraft be operated safely in a low visibility environment.

Disorientation in low visibility conditions is not limited to VFR pilots. Although Instrument Flight Rules (IFR) pilots are trained to look at and interpret their instruments to gain an artificial visual reference as a replacement for the loss of a visual horizon, we do not always do so. When a pilot is not proficient in flying during instrument conditions, the workload of flying by reference to instruments is compounded by such factors as turbulence.

The result of vertigo is loss of control of the aircraft. If the loss of control is sustained, it will result in an excessive speed accident. Excessive speed accidents occur in one of two manners: Either as an inflight airframe separation or as a high-speed ground impact, and they are fatal accidents in either case. Excessive speed accidents occur at airspeeds greatly in excess of two operating limitations which are specified in the Pilot's Operating Handbook—"Red Line" or "Maximum Operating Speed." These speed limitations are set to protect the structure of an aircraft.

All pilots should ask themselves whether they are sufficiently alert and proficient in the aircraft to fly during low visibility conditions and the turbulence anticipated or encountered. ■.

Aviation Quiz

1 Which phase of a spin is associated with the stabilization of rotation and airspeed?

2. Adding flaps and/or increasing the angle of attack would primarily result in an increase in ...

3. What two speeds come to mind when you hear "maximum excess thrust" and "maximum excess power?"

4. What type of stall is characterized by a pitching down moment, icing, and the addition of flaps?

5. You're in level cruise flight when you hit a bug, which clogs your pitot tube. You start returning to the airport. As you descend, what will happen to your VSI?

6. How do your engine's magnetos power the spark plugs?

7. Differential ailerons are designed to:

8. You're on a checkride and your examiner asks you: "For a given configuration, your airfoil will always stall at the same what?" You tell them ...

9. Your NAV 2 radio fails while you're enroute on an IFR flight plan. You're in visual conditions and it looks like you will be for the remainder of the flight. You're using GPS and don't plan on using your NAV 2 radio for the flight. Do you need to notify ATC?

10. You've entered icing conditions, your static heat fails, and your static ports ice over. Your pitot tube remains clear. ATC clears you to descend. How will your airspeed read?

Quiz Answers

1. *Fully Developed*

2. *Induced Drag*

3. *Maximum excess thrust is Vx, and maximum excess power is Vy.*

4. *Tailplane Stall*

5. *Your VSI (Vertical Speed Indicator) doesn't use pitot ram air, so if your static ports are open, it will work normally.*

6. *Each magneto powers 1 of 2 spark plugs in each cylinder. That way, if a magneto fails, the cylinder will continue to fire.*

7. *Differential ailerons reduce adverse yaw, and they do it by the up aileron traveling farther than the down aileron.*

8. *An airfoil will always stall at the same angle of attack, which is known as the critical angle of attack.*

9. *Federal Aviation Regulation (FAR) 91.187 requires you to tell ATC about any navigational, approach or communications equipment malfunction. Just tell them it won't affect your flight.*

10. *It happens like this: Your airspeed indicator compares dynamic (ram) pressure from the pitot tube against static pressure from your static ports. If you start to descend and your static ports are clogged, the static pressure in your airspeed indicator will be lower than the surrounding air, and the airspeed will read faster than you're flying, because there's not enough static pressure to offset the ram air.*

Dear Pilots and Aviation Enthusiasts,

FLY NEBRASKA is a non-profit created by Pilots in Nebraska who are working towards having a license plate issued by the State of Nebraska to support and highlight Nebraska Aviation. To do so, we need 250 individuals to reserve a plate for $70 each before the state will issue the plate.

Once we have 250 paid reservations, the plates will be issued and all additional contributions will go towards providing support to the Nebraska Aviation community.

If you would like to be one of the first Nebraskans to have a FLY NEBRASKA plate, please visit our website at **www.flynebraska.org** or contact Paul Seger 402-340-6285, Derek Whisler 402-430-7721, or Zac 402-266-1189.

Chili & Soup Fly-In

Harlan Airport

Sat, November 4th

11 to 1PM

Harlan Municipal Airport
(HNR) Harlan, IA
Scott Pigsley, Manager:
(712) 744-3366

Courtesy of 8-Ball Aviation Club

Fly in and eat FREE!!

Airport of the Year

Airport Project of the Year

The NDOT – Division of Aeronautics is now accepting nominations for Airport of the Year and Airport Project of the Year. Nominations need to be received at the Division of Aeronautics by December 31, 2023. Instructions are on the forms for mailing or e-mailing the nominations.

The Nebraska Division of Aeronautics is Hiring!

Visit https://statejobs.nebraska.gov/ and search for "Aviation Operations Chief" to learn more about how you can join NDOT as a pilot and manage the Flight Operations Division.

Events Calendar

Please check the Aeronautics web page for a list of upcoming aviation events.

York Airport (KJYR)
EAA Chapter 1055 Fly-in Breakfast
(free-will donation)
1st Saturday of the month
8:00 a.m. to 10:00 a.m.

Crete Airport (KCEK)
EAA Chapter 569 Fly-in Breakfast
3rd Saturday of every month,
8:00 a.m. - 10:00 a.m.
Suggested donation:
$10 for adults; $5 for kids

3rd Thursday Pilot Lunch
Jams – Midtown
7814 West Dodge Road,
Omaha, NE 68114
3rd Thursday of every month at 11:00 a.m.

Nebraska Chapter of the Antique Airplane Association Hamburger Cookout (free-will donation)
last Saturday of the month
May-October 11:30 a.m. -1:00 p.m
KHSI Hastings Municipal Airport

Harlan Municipal Airport
Chili and Soup Fly-In
Saturday November 4th
11:00 a.m. to 1:00 p.m.
Scott Pigsley, Manager
712-744-3366