PIREPS

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DEPARTMENT OF TRANSPORTATION

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We are cleared for Take Off

By Mark Langrud

I want to take this opportunity to introduce myself. I am Mark Langrud, the new Nebraska Department of Transportation – Aeronautics Operations Chief Pilot. I am originally from Broken Bow and have been flying for almost 33 years. In college, I was enrolled in the aviation program at UNK long enough to get my Private Pilot certificate. I obtained my instrument rating in 1999 in Beatrice and then obtained my commercial and instructor certificates in 2007 in Crete. I have been instructing ever since then, and have helped over 80 students get their wings, including several who fly in the military now and for airlines across the globe. I have also been flying charter, private jet, and airlines in some capacity or another since 2013.

I am also fascinated by Nebraska Aviation History and always looking for books, articles, maps, and photos that highlight flying in Nebraska. My current Nebraska aviation library is rather slim and I know there are more books out there: Winging It! (Jack Jefford autobiography), Sharpie (Evelyn Sharp biography), Tower this is Andy (Norfolk aviation history), and A Mighty Force for Peace (Lincoln AFB history). Please send recommendations to my attention!

In addition to Chief Pilot, I will also have Aviation Education Outreach and Unmanned Aircraft System policy responsibilities. I will also be the primary contact and editor for PIREPS. My hope is to get PIREPs back to a monthly schedule by 2025. Current and potential contributors, please feel free to reach out to me. I will be looking for articles and photos from instructors, pilots, examiners, airport operators, aeromedical examiners, and mechanics. Flight instructors, please send me those first solo photos and let's share in these exciting first flight achievements.

Please reach out and say hello and introduce yourself. My email is mark.langrud@nebraska.gov and my office number is (402) 471-7932.

And remember, if the weather is so bad you can't see your copilot, you probably shouldn't fly.

Clear skies!

Mark Langrud. ■

South Sioux City Martin Field (7K8) is being sold on October 11, 2024 and likely closing for good. Be sure to check NOTAMs.

The 2025 Nebraska State Fly-In will be at

Gordon Municipal Airport
June 7, 2025

Contact: John Reed
308-282-0837

The following photos are from the Nebraska Aviation Council of the 2024 Nebraska State Fly-In at O'Neill in July.

Director's View

Division of Aeronautics Updates


Jeremy Borrell

The Division of Aeronautics has been in a continual state of evolution over the past few months. I wanted to take a few minutes to share some of those changes. Our team continues to grow with the addition of several new members and the retirement of a longstanding team member. David Morris served his last day as a member of the Nebraska Division of Aeronautics on July 31st. David joined the Department of Aeronautics in 2004 (following his retirement from the Nebraska State Patrol) and most notably served as Aviation Operations Chief. During this time, he was responsible for many of our programs including facilitating the Aviation Art Contest, educational outreach, and publishing the airport directory and PIREP's. His retirement is well-earned, and he will be missed! In his place, we have hired Mark Langrud, who will take on David's responsibilities and help shape the future of our Flight Operations team. Mark brings a wealth of aviation experience and has quickly integrated into the team.

The Division also recently added Teresa Zulkoski into the role of Federal Aid Administrator II. She joined the team with a strong accounting background and quickly helped us improve our processing times. We are thrilled to announce that two more employees will be joining the team in September in the roles of Aviation Electronic Specialist and Airport Pavement Engineer. We are excited to welcome them to their new position and will share more information once they acclimate to the team. Filling these critical vacancies will bring the Division to 100% capacity and allow us to get caught up on existing projects and take on new and exciting opportunities.

We also recently underwent an office move. As part of the ongoing renovation process at NDOT, we have been moved into a transient location. We can now be found on the lower level of the 1500 Building on the NDOT campus. The transition went smoothly, and we are back up to full operational status. Our address will remain the same, as we will ultimately return to the 1600 building.

On a broader scale, we recently attended the annual National Association of State Aviation Officials (NASAO) and Four States Conferences, and it is very clear that the aviation industry is looking ahead to the many emerging technologies currently being utilized, certificated, built, or designed. These technological advancements will increase safety and efficiency, enhance access to air transportation, and reduce environmental impact. The Division of Aeronautics looks forward to these changes and safely integrating them into our aviation system ■

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.

Minimum Control Speed (Vmca)

David Morris

Minimum Control Speed (Vmca) is designated by the red radial on the airspeed indicator and indicates the minimum control speed, airborne at sea level. Vmca is determined by FAA regulations as the minimum airspeed at which it is possible to recover directional control of the aircraft within 20 degrees heading change, and therefore maintain straight flight, with not more than 5 degrees of bank into the operating engine if one engine fails suddenly with:

- Takeoff power on the operative engine.
- Rearmost allowable center of gravity.
- Flaps in the takeoff position (normally zero flaps).
- Propeller on the failed engine windmilling (feathered if Auto-Feather system is required).

However, sudden engine failures rarely occur with all factors listed above, and therefore, the actual Vmca under any particular situation may be a little slower than the red radial on the airspeed indicator. Most airplanes will not maintain level flight at speeds at or near Vmca. Consequently, it is not advisable to fly at speeds approaching Vmca, except in training situations or during flight tests. Adhering to the practice of never flying at or below the published Vmca speed for your airplane will virtually eliminate the loss of directional control as a problem in the event of an engine failure. ■

Wind Shear

David Morris

Wind shears are rapid, localized changes in wind direction and/or speed, which can occur vertically as well as horizontally. Wind shear can be very dangerous to all aircraft, large and small, particularly on approach to landing when airspeeds are slow.

A horizontal wind shear is a sudden change in wind direction or speed than can, for example, transform a headwind into a tailwind, producing a sudden decrease in airspeed because of the inertia of the airplane. A vertical wind shear is a sudden updraft or downdraft. Microbursts are intense, highly localized severe downcrafts.

A prediction of wind shears is far from an exact science. We need to monitor our airspeed carefully when flying in or near storms, particularly on approach. Be mentally prepared to add power and go around at the first indication that a wind shear is being encountered. ■

Carburetor Icing Refresher

Mark Langrud, Aeronautics Operations Chief Pilot

From 1998 to 2007, there were 212 accidents attributed to carburetor icing. Out of these accidents, 13 resulted in fatalities (Special Airworthiness Information Bulletin CE-09-35: Carburetor Icing Prevention).

In an airplane equipped with a float-type carburetor, filtered air flows through the carburetor venturi. The carburetor venturi is a designed narrowing of the airflow tube that creates a low pressure point to aid in fuel vaporization. Low pressure and fuel vaporization combine to create a sudden decrease in temperature, which increases the potential for any moisture in the air to freeze and form ice on the internal surfaces of the carburetor. This ice restricts flow of the fuel-air mixture and reduces power.

Because of this cooling affect (potentially up to a 70°F temperature drop), carburetor ice is most likely to form at ambient temperatures below 70°F and relative humidity greater than 80% (though be mindful of carburetor ice below 100°F and 50% relative humidity). The first indications of carburetor icing are:

1. RPM drop in fixed pitch propeller airplanes or manifold pressure drop in constant speed airplanes.
2. Engine roughness in both fixed pitch and constant speed airplanes.

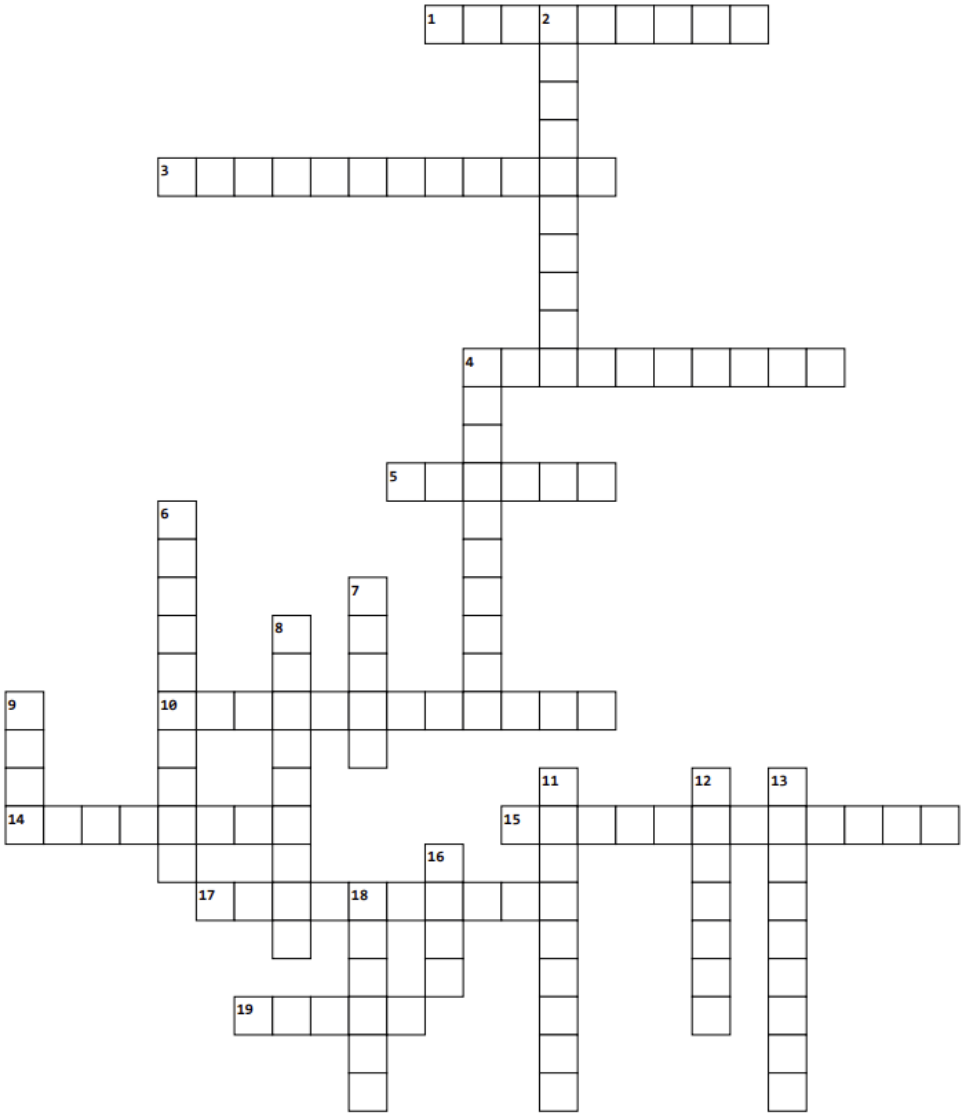
Certification for carbureted airplanes requires a heated source of air be provided as a response to carburetor icing. Therefore, to prevent carburetor icing, pilots should:

1. Assure proper functionality of carburetor heat during pre-takeoff checks.
2. Use carburetor heat on approach and descent when operating at low power settings or in conditions where carburetor ice is likely.

I have experienced carburetor icing on both visual and instrument meteorological conditions. The most notable case was during an instrument training flight in a Cherokee 180 on an ILS approach in IMC with a temperature around 50°F. While vectoring to final, the student had been subconsciously increasing throttle in response to gradually decreasing RPMs from a carburetor icing event. When we reached the final approach fix and intercepted the glideslope and decreased power to descend, the engine immediately began running very rough with lower-than-expected power output. We promptly recognized this as carburetor ice and applied carburetor heat. After a few additional seconds of engine roughness while the ice melted, engine output returned to smoother operations, and we continued our approach. The remaining practice approaches were conducted with carburetor heat applied.

As always, pilots should check the POH for additional guidance on carburetor heat use in specific aircraft. ■

CROSSWORD PUZZLE



Across

1. Used to measure pressure at the Earth's Surface

3. Local storm produced by a cumulonimbus cloud

4. Turbulence caused as wind blows across the Earth's surface

5. Cloud made up entirely of ice crystals

10. Heat released by a gas to change it to a liquid

14. Temperature air must be cooled to have 100% humidity

15. Cloud associated with thunderstorms

17. Boundary between the troposphere & stratosphere

19. Precipitation that falls from a cloud but does not reach the ground

Answers on page 6

Down

2. Lift caused by mountains

4. Concentrated downdraft from a thunderstorm

6. Vertical transfer of energy, can cause thunderstorms

7. Dividing line between two different airmasses

8. Fog that forms on clear nights with light winds

9. Horizontal movement of air cause by pressure differences

11. Thunderstorm with a rotating mesocyclone

12. Rotating column of air below a thunderstorm that reaches the ground

13. Electrical discharge in the air associated with thunderstorms

16. Turbulence generated behind an aircraft that is producing lift

18. Makes up 21% of the Earth's atmosphere

TRIVIA CORNER

By Dave Morris

1. Which instrument in a typical airplane operates without the use of a gyroscope?
2. Which instrument(s) operate in a typical airplane by relying on gyroscopes?
3. Why is the Lockheed Martin/ Boeing F-22 Raptor considered an unstable aircraft?
4. How do bats fly differently from birds?
5. Why don't aircraft manufacturers provide an extra Pitot Tube which can be deployed when the regular one fails?
6. Could air pressure drop to zero? If so, where?
7. If a baby is born on an airline flight over the mid-Atlantic Ocean, it will be considered to be a citizen of what country? ■

Answers on page 6

TRIVIA CORNER (Answers)

By Dave Morris

1. Airspeed Indicator. This instrument works by measuring the ram-air pressure in the aircraft's pitot tube.
2. Heading Indicator, Attitude Indicator, Turn Coordinator.
3. The Lockheed Martin/Boeing F-22 Raptor is a single-seat, twin-engine highly maneuverable fighter aircraft. Fighter aircraft are designed to be unstable to make them more agile. This also makes them harder to control. Fighter aircraft use computers to help correct their flight path, making it possible for the pilot to control an unstable aircraft.
4. While both birds and bats fly by flapping wings in a down-and-forward motion to generate lift, the main difference comes from the bat's use of additional "fingers". Bats have 3 fingers over which the skin is stretched. This allows the bat to have a better range of motion in its flying. They also have tons of hyper-sensitive hairs that help them detect small changes in air currents and breezes. Combine that with the fact that bat wings don't have to open the same amount on each side, they are much better at maneuvering. However, because of how they evolved, very few bats are able to walk or take off from the ground.
5. There is nothing stopping a manufacturer from adding a secondary pitot tube to an airplane, however, it doesn't make much sense in most cases. A pitot tube is an expensive part of an aircraft and requires quite a bit of space to be implemented; this means they may have to redesign the entire aircraft around it, when the benefit is fairly small. To combat the typical type of pitot tube blockage, which is ice, all aircraft are required to be equipped with a heated pitot tube to melt the ice, along with a requirement for the tube to be inspected before and after every flight.
6. Yes. Air pressure is caused by air so if there is no air, then there can be no air pressure. There is no air pressure in outer space because there is no air in space. However, Earth's atmosphere, which is made up of layers of air, doesn't just end. The air gets thinner and thinner as we go up until it becomes so then that it merges into space. There is not an exact spot where Earth's atmosphere and space meet, but there is a commonly accepted boundary call the Kármán Line at 62 miles above sea level.
7. According to the 1961 United Nations Convention on the Reduction of Statelessness, the birth shall be considered to have occurred in the country of the aircraft's registration. ■

New Entry Procedures In Effect In Mexico

According to an internal memo, the Mexican Federal Civil Aviation Agency implemented new entry procedures for all foreign aircraft entering the country starting January 1. The new "Single Entry Authorization" (Autorización de Internación Única) is required for all foreign registered aircraft and is valid for 180 days; during that time aircraft may enter and depart Mexico freely.

CROSSWORD PUZZLE (Answers)

Across	Down
1. Barometer	2. Orographic
3. Thunderstorm	4. Microburst
4. Mechanical	6. Convection
5. Cirrus	7. Front
10. Condensation	8. Radiation
14. Dewpoint	9. Wind
15. Cumulonimbus	11. Mesocyclone
17. Tropopause	12. Tornado
19. Virga	13. Lightning
	16. Wake
	18. Oxygen

Events Calendar

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

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.

October

10/26
NGAAA Fly-in Hamburger Feed
11:30 am - 1:30 pm | Hastings, NE (HSI)