

PIREPS

PIREPS

March 2025

Volume 78, Issue 3

Published monthly by

Nebraska Dept. of Transportation
Aeronautics Division
1600 Nebraska Parkway
Lincoln NE 68502
402-471-2371
dot.nebraska.gov/aeronautics

Governor Jim Pillen

NDOT Director Vicki Kramer

Aeronautics Commission

Scott Tarry, PhD, Chair

Michael Cook Edward Dunn
Jon Large Tom Trumble

Administration

Director Jeremy Borrell

Deputy Director.....Andre Aman

For Comments/Questions, Contact

mark.langrud@nebraska.gov

Circulation: 3320

Calendar of events:

April

4/12 | 2nd Annual Plane Pull | 9 am | West Side of Lincoln Airport 3410 West Mathis Street, Lincoln, NE 68524 | Sponsored by the Women In Aviation International Cornhusker Chapter

4/26 | NEAAA Hamburger Fly-In at the Hastings Municipal Airport (HSI) | 11:30am-1pm

4/27 | Nebraska City Jaycees Fly In Breakfast at the Nebraska City Municipal Airport (AFK) | 8am-Noon | Pilots and passengers eat free.

May

5/31 | NEAAA Hamburger Fly-In at the Hastings Municipal Airport (HSI) | 11:30am-1pm

June

6/7 | State Fly-In at Gordon Municipal Airport (GRN) | 8am-2pm | Contact: Ken Costello, Gordon Airport Authority, State Fly-In Coordinator at (308) 360-9087 or ken.costello@blackhillscorp.com

6/28 | NEAAA Hamburger Fly-In at the Hastings Municipal Airport (HSI) | 11:30am-1pm

The Navigational Aids Division

Nav aids History, Nav aids Division 2025

The Navigational Aids Division, located on the Kearney Regional Airport, is centrally located in Nebraska to provide efficient customer focused response to the Nebraska airports we serve. Our staff currently serves (33) airports across the state, maintaining navigational facilities and weather systems in accordance with the Federal Aviation Administration (FAA) Standards to support the National Airspace System.

The 'Nav aids' Division was initiated in February of 1955 with the installation and commissioning of its first VOR sites at Alliance, Ainsworth and Norfolk. Over the years adding additional VOR's, DME's, Fan Markers, NDB's and AWOS systems. At one point, they maintained (70) rotating beacons, (50) NDB's, (12) VOR's, (12) DME's and (3) Fan Marker's.

There was a time, prior to the installation of AWOS systems, that they maintained (17) SWOP weather stations [Shared Weather Observation Program]. This was a shared cost program between the FAA, NWS and NDA. Certified observers took observations on an hourly basis from 7 – 7 each day. These weather stations were located at airports, with a few exceptions. The observers made and recorded hourly observations, transmitting them over a computer to their local NWS office. If weather

conditions changed, they would also take a "special" observation and send that out. NDA personnel did the required maintenance inspections on those weather stations, completed the monthly billings, the NWS supplied the equipment, forms and supplies for the observations. i.e. Helium for the balloons, dry & wet bulb thermometers, slings for the thermometers, bulbs for the ceiling lights. This provided pilots with current weather information prior to the introduction of the AWOS.

In 1991 the first (8) state-owned AWOS systems were installed in NE. Those sites are still in service and have received up-upgrades over the years. We currently own/maintain (23) AWOS sites across the state.

All (23) sites, except for one, are AWOS III P/T's and are disseminated into the FAA's National Data Interchange Network (NADIN).

Our technicians are required to have a General Radio Telephone License and be fully certified by the FAA on all the equipment we maintain. Certifications include written and on-site exams with the FAA. The different manufacturers' equipment also requires certification. Obtaining certification can take up to two years. ■





Pilot Proficiency in Stall Recognition and Recovery

By Mark Langrud,

In January PIREPs, I talked about Five Critical Areas related to Flight Safety. The first and second items were Loss of Control (LOC) and Pilot Proficiency, respectively. Pilots must know how to avoid potential LOC situations. LOC is an extreme manifestation of a deviation from intended flight path. Statistically, it is the most prevalent cause of general aviation accidents in business, instructional, and personal flying. LOC occurs most in pilots who are not proficient, especially at recognizing an impending stall and recovering from a stall. When I ask pilots when they last practiced stalls, they usually tell me that it was during their last flight review. Since flight reviews are required at least every 24 months to stay legally current, that means that these pilots have not practiced one of the most critical aspects of staying flight safe in a very long time.

I find a lot of pilots are timid about stalls. Recognizing an impending stall is probably the most important ways to prevent a stall in the first place. There are several clues that pilots should innately pick up as a stall is approached. The stall warning horn or light may go off, the airplane may buffet, the nose may pitch down, the sound of airflow may decrease, or the VSI may start to show a descent despite having a nose-up attitude. Any one of these clues should immediately trigger a response to prevent the airplane from stalling in the first place.

Stall recovery should always include a decrease in pitch angle and patience as we wait for airspeed to increase. Should a wing drop (a sign of a developing spin), then you should apply opposite rudder immediately to maintain directional control ("step on the high wing"). All remaining stall recovery steps are used to increase flying speed and minimize altitude loss: maximum available power, retract flaps as airspeed increases, retract gear with a positive rate of climb.

With practice, most pilot should be able to recover from a stall with minimal altitude loss. The amount of altitude loss increases with the delay in recognizing and recovering from a stall. A proficient pilot should be able to recognize an impending stall well before it happens, with zero altitude loss. ■

BRRRR.... Why is it so Cold Outside?

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

I had a lot of questions about the cold temperatures we recently experienced in February 2025, so I thought this might be a good topic to write about. To give a quick basic explanation of this, we need to talk about air masses, snow, and cloud cover.

Let's start by defining what an air mass is. An air mass is a horizontally large (up to 2,000 miles in diameter) body of air with fairly similar temperature and humidity characteristics. There are five air mass types that we will look at: Continental Arctic (cA), Continental Polar (cP), Maritime Polar (mP), Continental Tropical (cT) and Maritime Tropical (mT). See Figure 1 below.

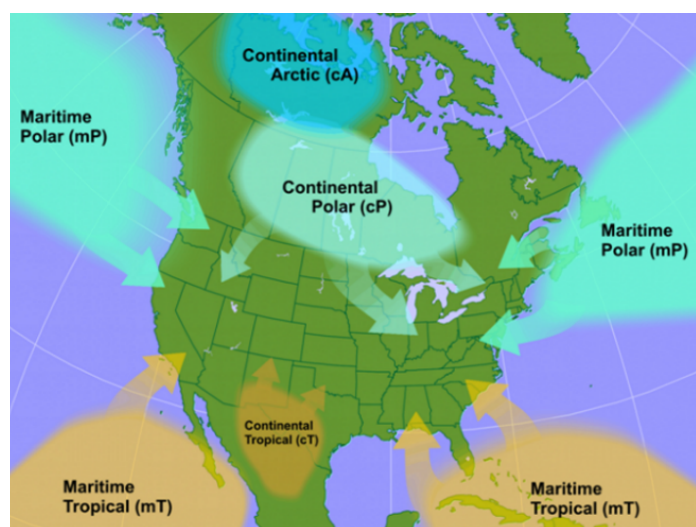


Figure 1: Credit: David Babb from Penn State

Continental Arctic (cA) air masses form in the arctic regions and are the coldest and driest air masses. These air masses will frequently move south into the U.S. during the winter. A Continental Polar (cP) air mass forms over Canada during the winter months. This air mass is cold and dry, but warmer than the arctic air mass. This is the air mass that has the most effect on the weather in Nebraska during the winter. Maritime Polar (mP) air masses form over the northern maritime regions of the world. These air masses are characterized by cold and moist conditions. These air masses mostly effect the northwest and northeast coasts of the U.S. The Continental Tropical (cT) air mass forms over the desert southwest of the U.S. mainly in the summer. This air mass is created by the intense surface heating that occurs in this area, which makes the air mass very hot and very dry. You know, it's a "dry heat". The last air mass is the Maritime Tropical (mT), which forms over tropical ocean areas,

making this air mass warm and moist. This air mass effect the weather in U.S. east of the Rockies during the summer. Isolated thunderstorms form frequently in this air mass and that is why they are called "Air Mass' thunderstorms.

Now that you know the source regions for the different types of air masses, let's look at what happens to them as they move away from where they form. As the air mass moves from its source region, it will start to be modified, and the temperature and humidity will change. For me, three things dominate my thoughts when I look at how the air mass will modify as it moves: how long it was in its source region, the time of year it is, and the characteristics of the surface it is moving over.

Since we are talking about the cold, we are going to focus on a Continental Arctic air mass. The first thing I look at is how cold the air mass is (how long it was in its source region). The longer it sits over the arctic, the colder it will be. Then I think of the time of year. The air mass will not be as cold in October as it will be in January. Now, this does not mean it could not get cold climatologically in October, but as we all know, the coldest air normally occurs in January, so it can be much colder then. Or in our recent situation, February.

The next factor I look at is the surface conditions between Nebraska and its source region. Is the ground in Canada and the Dakota's open and lack snow cover? Or is the ground completely covered with snow in those areas? The difference will affect how much the air mass will modify. If the ground lacks snow, the air mass can be modified quicker, and the temperature will rise more quickly. If the ground is covered in snow, the air mass will be modified less quickly, and the temperatures will rise at a slower pace. This allows the air to remain colder longer, allowing the colder air to move further south. If you look at the satellite image in Figure 2, it shows that snow cover dominates the Earth's surface from Canada down into Oklahoma. So, in this case, the air was able to retain its colder temperatures as it moved south. This is indicated by the cold temperatures reported at 13Z on 19 Feb 2025 in Figure 3. The cold air extends down into Oklahoma and Texas.

There are other important factors to consider when we look at forecasting surface temperatures. We have to consider how much snow is on the ground

BRRRR...Continued

and how recently it has fallen. Snow cover does not allow the Earth's surface to absorb much of the incoming solar radiation from the Sun, and with the lack of absorption of solar radiation, the Earth can't do its job of warming the atmosphere. Oh, and the fresher the snow, the more of a factor it is on the temperatures. And if you all remember, we did have several inches of fresh snow across the state as the air mass moved over. Another major factor is cloud cover. Again, look at Figure 3. North Platte's (KLPB) sky cover is 6,500 broken with a temperature of -7F, and Valentine (KVTN) has clear skies with a temperature of -26F. The clouds act like a blanket for

Figure 2: Snow Cover 13Z on 19 Feb 2025

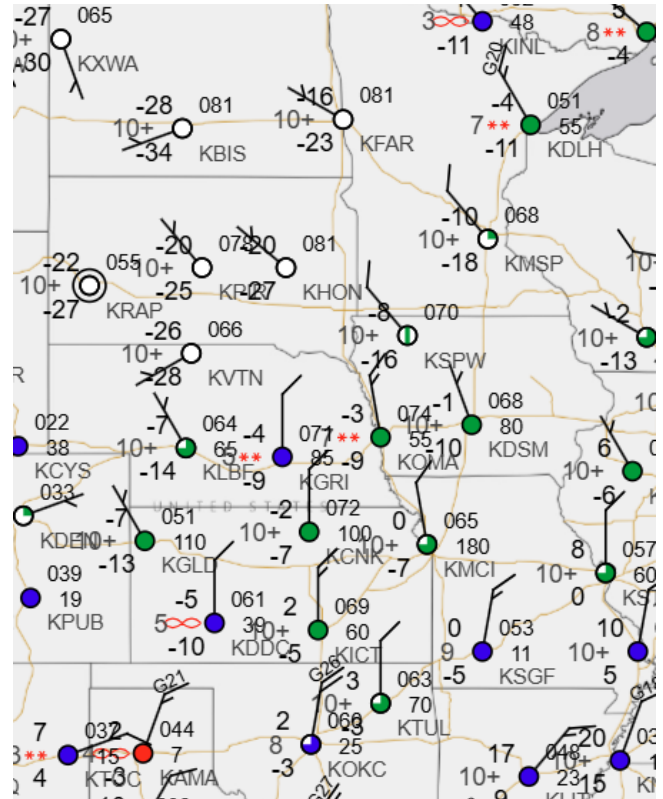


Figure 3: METARS from 19 Feb 2025 at 13Z

the atmosphere, keeping the temperatures warmer.
The "Greenhouse" effect.

Of course we can dive deeper into this subject, but I hope that this has helped explain the basics on how and why the temperatures got so cold in February 2025.

Be Safe Out There!! ■

New FAA Rule Requires Drug & Alcohol Testing For Foreign Repair Stations

By David Morris

The Federal Aviation Administration (FAA) has issued a final rule that requires certificated repair stations outside the U.S. to implement a drug and alcohol testing program. The testing applies to workers who perform safety-sensitive maintenance functions on certain air carrier aircraft.

This rule will help ensure these employees are held to the equivalent high level of safety standards, regardless of where they are physically located.

The rule also requires repair stations to ensure their employees receive all necessary anti-drug and alcohol abuse training and send their testing data electronically to the U.S. Department of Transportation (DOT).

This action is a result of the FAA Reauthorization Act of 2024. This new requirement may affect as many as approximately 977 repair stations in 65 countries. ■

Pireps has Gone Electronic

Pireps is No Longer Available In Print Form.

**If you would like to receive
Pireps electronically, please
send a current email address
to:**

mark.langrud@nebraska.gov

Gordon Municipal Airport



Saturday, June 7, 2025

Nebraska State Fly-In 8:00AM – 2:00 PM

Some of the activities being planned are:

**Aerial Show by the Red Star Pilots Association, a Drone Demonstration,
National Guard Fly-Over, Vendor & Business Reps,
Pilot Competitions, Entertainment, Crafts for Children, and ...**

FOOD!

Including a FREE BREAKFAST!

For more information, please email:

Ken Costello, Gordon Airport Authority, State Fly-In Coordinator
ken.costello@blackhillscorp.com 308-360-9087



Sponsored by:  **NEBRASKA
AVIATION COUNCIL**

NEBRASKA AVIATION COUNCIL

Airport location is: 1882 U.S. Highway 20, Gordon, Nebraska 69343