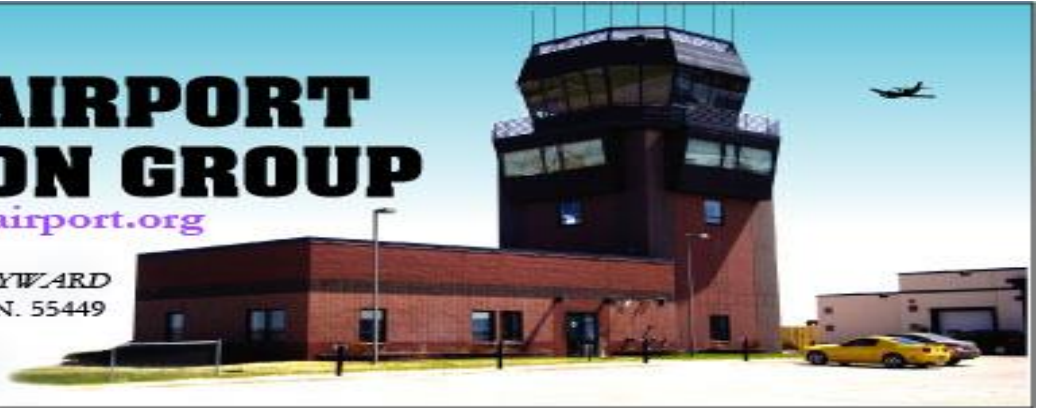


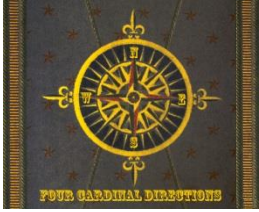
BLAINE AIRPORT PROMOTION GROUP

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8891 Airport Road C-2, Blaine MN. 55449



THE EDUCATION COORDINATOR OCTOBER 10, 2013



A compass was first invented as early as 206BC. A compass referred to as a magnetic needle was used by the military in China in the 12th century (about 1040-1044). Recorded compass use as a maritime navigational device did not appear until 1117. Recorded evidence of the use of the compass in Western Europe appeared between 1187 and 1202.

These were the very earliest development in discoveries of magnetism and were used for orientation devices when visual navigation was limited by poor weather. Documents from this early stage of discovery described what is known today as **thermoremanence**, how a very thin piece of metal was shaped like a fish with a head and a tail, then subjected to hot coals until it was red hot. The tail of the fish was dipped in cold water. This heating and cooling process developed a magnetic property in the tail of the metal shape. When cooled the metal fish was then carefully placed on the surface of a bowl of water out of the disturbance of wind and rain and it would float. The fish head would rotate to a southern direction.

NAVIGATIONAL INSTRUMENTS

The basic dry magnetic portable compass is widely available. A disk, referred to as a compass rose defines the cardinal directions; north, south, east, and west. The disk is set in a frame of reference and is positioned on a pivotal point to allow free movement around the center of the frame. The frame has markings that are reference points of degrees in a circle called **Azimuth** from 360° **north**, **west** is 270°, **south** is 180°, **east** is 90°. This continues to be the basis for the modern compass but advancements in navigational instruments continue to be made. Development in Aerospace requires a greater understanding of earth's magnetic properties when developing new methods in safeguarding flight navigation in all weather conditions, flight maneuvers, and navigational advancements in vehicle construction.

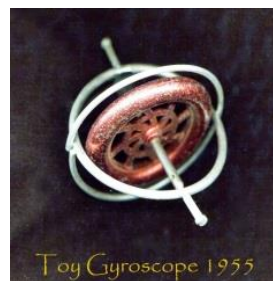
AIRCRAFT DIRECTIONAL INSTRUMENTS

Flying without instruments required visual sightings of land features, buildings, roadways, rail lines, & land section lines. In the early 1900s compasses were used as a general direction finding tool but the disk of the compass was not stable and would rotate in wide angles of the directional heading of where the pilot wanted to go. These were compasses or more



accurately called **Inclinometers** used for surveying and plotting building construction but were useful as a sighting tool for the early pioneering pilot. The disk would be aligned by viewing a distant object through the upright sighting frames. At the same time sighting through the magnifying glass would reveal what is called the **Azimuth** number corresponding to the direction being viewed.

"to view the earth's rotation"



A small toy like device was developed by a French physicist in 1851 that had a heavy outside rim that housed a small wheel. When the inventor, Leon Foucault spun the wheel he found that the device would remain in a ridged position while the wheel was in motion. Leon named the device a **gyroscope**

because he believed this to be the characteristic way the earth rotates. The **gyroscope** was considered only as a toy until 1911 when an American inventor Elmer A. Sperry patented the **gyrocompass** which combines the force of gravity to a gyro wheel causing the axis of the wheel to always seek the north and south direction. The **gyroscope** has made possible a stable reference for both the attitude and direction of the aircraft carrying the gyro. The combined technology of the compass, attitude, and directional gyros in the **gyrocompass** present a clearer picture to the pilot and reduce in-flight corrections. "View your aircraft flight path from an outer-space view to help understand **gyro drift** and know how to compensate for it".



The Wings of Freedom Tour

Alanna Hansen came to the Blaine Airport on July 21, 2013 with her flight log book in hand. Her previous outing was made on May 12, 2012 to attend a Young Eagles, Experimental Aircraft Association event held at Key Air. A young man invited Alanna to go on a flight so she agreed and was escorted to a plane. The pilot took time to familiarize her with the plane and taxied to the take-off point on runway 36. Alanna was given a flight check list and went through the pre-flight check. The weather was great so it made for a good experience for a young pilot. She was given control of the plane and flew the entire time making several maneuvers. The flight provided by the EAA was fantastic and Alanna enjoyed every minute of it.



Larry carried the torch to preserve history and to do what he could to provide young people like Alanna a chance to see history up close and first-hand what it is like to fly.



Alanna had an appointment to fly in the Duel Control P-51C Mustang in the late afternoon on July 21. She was briefed by the pilot and then stepped on the planes wheel and lifted herself on to the wing. She looked comfortable as she climbed into her seat, and strapped on her parachute while getting some final instructions.

It was fun to see her on the take-off and would not see her again until the landing one hour later. The flight took them to an altitude of 2000 feet where Alanna was given the go ahead and they flew up to 8000 feet where they could maneuver undisturbed by other planes.



Collings Foundation, Wings of Freedom Tour was staged at Golden Wings Museum area from July 18-21 and featured a P-51 Mustang, B-17 Flying Fortress, and B-24 Liberator. The Collings Foundation has been frequent visitors to the Blaine Airfield over the past 16 years. They have provided three of the most famous WWII bomber and fighter aircraft that are beautifully restored for offering actual flight experience and provide a majority of their flights as tax-deductible. Craig Schiller has stepped forward over the years to support the efforts of The Eight Air Force Association of Minnesota in bringing the Collins Foundation to the Blaine area. Greg Herrick has provided the facilities and opened the museum in support of the 8th Air Force Association as well.

A special mention need to be made for the one that probably cared the most regarding the arrival on the field of the Collings Foundation crew and especially the B-24 Liberator. Larry Bachman was the person behind a dream to make sure the history remains alive regarding the exploits of fellow pilots and crew that flew 35 missions with him over Nazi Germany in a B-24 Liberator.

FOR OTHER EVENTS: www.ANEairport.org

Check the Blaine Airport Promotion Group web page for events. These events scheduled each year require a strong volunteer organization and schedules and contact information are posted. On June 1st & 2nd (DAD) Discover Aviation Days is featured as our open house to the airport that has great appeal for our community. We see young volunteers from the Civil Air Patrol and Sea Cadet organizations that take part and are experiencing first-hand airport functions and develop personal skills that prepare them for possible careers in Aerospace industries.