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8891 Airport Road C-2, Blaine MN. 55449

THE EDUCATION COORDINATOR • APRIL 10, 2014

SPORTS GLIDERS have three basic forces that influence flight. The wings need to be designed to produce enough *lift* to compensate for the weight of the glider and can develop greater lift as the glider gains speed. As the glider gains speed, *drag* also increases. The glider has no engine to produce thrust so *gravity* is used by flying at a sharply downward angle trading altitude for speed. Altitude becomes the source of the thrust to power the glider.

GLIDE RATIO

A glider design has what is called a glide ratio that tells how far in a horizontal distance a glider can fly compared to the drop in altitude, so a glide ratio of 60:1 would indicate that a pilot might glide for 60 miles if started at an altitude of 1 mile.

DRAG REDUCTION

The reduction of drag is the most important design objective in increasing the glide ratio. Gliders have wings that are very long in comparison to the width (chord), meaning they have a high aspect ratio and will produce very little drag for the amount of lift they produce. The outer skin is made of a smooth fiberglass or carbon composite that eliminate the need for rivets or seams that would cause drag. Gliders are made as small and light as possible to accomidate one or two people with a small frontal area to reduce drag.

LAUNCHING AND SOARING TECHNIQUES

Aero-tow planes are used to launch and obtain high altitude for the glider pilot to begin a soaring flight. Pilots of gliders and the powered aircraft are required to follow federal air regulations governing flight. In the 1920s glider pilots found that they could stay aloft to obtain longer flights by using updrafts caused by wind blowing against hillsides and valleys near their launch sites. Meteorologists soon discovered and began to understand mountain waves produced by the warmth of the sun on mountain surfaces. These discoveries lead glider pilots to make the first high altitude flights using the updraft of warm moist thermals along a variety of land features that help to form clouds and provide lift for the glider.

WEATHER AND FLIGHT PLAN

A glider pilot will determine if weather conditions are safe for soaring and will plan a flight according to local conditions and planned destination. A glider is powered by gravity so altitude is a controlling factor in the flight plan. Pilots must locate thermals that rise faster than the sink rate of the glider. The success of the flight will be determained by the ability of the pilot to locate thermals, entering and leaving thermals and judging which clouds have the best chance of providing the next uplifting thermal.

CROSS COUNTRY SOARING

Crossing over terrain beyond the local soaring site will require greater preperation and experience in navigational techneques. A pilot will need to check weather in the area of the proposed course of flight to determine how good thermals are and what the prediction will be for continued activity over the planed course. Checking for landing possibilities and airports faverable to prevailing wind conditions is important as well as consideration for the effect headwind may have during the flight. Speed between thermals plays a part in the successful flight. A ballast tank can be used to increase speed to improve lift during transitions between thermals and can be emptied prior to landing. A Sectional Aeronautical Chart containes general information about topography, roads and highways, lakes, cities, private and public airports, restricted and warning areas, and boundries and limited vertical restrictions for different classes of airspace.

Learning about termals and structure of cloud formations and how to identify when a cloud is likely to begin losing lift capabilities is essential in successful soaring. The nature of thermals is a combination of sun, producing heat that is distributed unequally on the earth and wind currents that work to equalize the atmosphere. Updrafts and downdrafts are the vertical winds that make soaring possible. The glider pilot wants to maximize time in the updraft as long as possible.

GLIDER FLIGHT REVIEW

On March 5, 2014 Craig Schiller and Kris Lange visited with Bruce Thompson at an old WWII glider training base located at Tucson Arizona. The base is now owned and operated by a glider club of 100 members. A few members flew gliders in WWII and one of the members landed in Normandy in a glider on D-day, so Graig has some fun history about gliders to tell.

This was my first experience in a glider. Most gliders are single seat craft but for a first time flight, a two-seat craft was used. I found that piloting a glider is very different than a powered flight in many ways.

Craig & Bruce

First – unlike powered flight, the take-off is the most challenging and potentially dangerous part of gliding. In most cases, the glider is faster than the tow-plane so the glider pilot has a challenging responsibility to maintain the tension on the rope between the glider and tow-plane keeping the rope from forming a loop that could become entangled on the tail of the tow-plane or glider wing.

Aero tow to altitude

Second – the glider pilot depends on the tow-plane to take the glider to an altitude where the glider pilot will release the rope and start the flight. Going to a spot were thermals are poor may end the flight and a return to the field. A high altitude will give the pilot a greater chance to find thermals for a successful flight, so planning and teamwork are essential.

Instrument panel

Third – your mind is always thinking about energy management. Unlike a powered flight, if you do steep turns and aerial maneuvers or can't find lift, the glider will lose altitude. Once you are at minimum safe altitude, you need to approach the landing area and the flight is over. At higher altitude with thermals present, you will have almost limitless time to stay in flight. No running out of fuel worries!

Forth – how calm and quiet it is. We are so used to putting on headphones to protect hearing and to communicate better. None were needed! Bruce and I spoke at a volume as if we were across the table from each other. There was the sound of some wind, but not much. I was able to take a second flight, and learned more nuances of glider flying. I can really see why so many are attracted to this form of aviation. I think every new or even experienced pilot should go for a few glider flights. The use of energy management and "stick & rudder" flying is greatly heightened, skills that are carried over to powered flight. I really look forward to my next flight. *Craig Schiller*

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Learn About Glider Operations

EAA CHAPTER 237
ANOKA COUNTY AIRPORT

MEETING: MONDAY, APRIL 28TH 2014

6:00 HOT DOGS, CHIPS, POP
(FOR A DONATION)

7:00 BUSINESS MEETING

8:00 PRESENTATION:

Powered Aircraft Cohabitating with Gliders

Learn about glider operations from pre-launch to thermaling and cross-country flights to landing, how gliders and powered aircraft can safely airport occupy environment together. You'll also learn how easy it is to get a glider license, whether as an initial glider license or an add-on to your current pilot's license.

Presentation by Redwing Soaring Association's Paul Campobasso CFIG

Monthly meetings are located at the EAA Chapter 237 building.
8797 Airport Road, Blaine, MN. 55449
(Located at south end of Anoka County Airport (KANE) next to the Golden Wings Museum)

CUB SCOUT PACK 65 VISITED THE BLAINE AIRPORT

Den 6 and 9 from Cub Scout Pack 65 was delighted to experience the Golden Wings Aviation tour hosted by the Blaine Airport Promotion Group. 12 cub scouts learned about classic airplanes and aviation in an exciting and informative tour provided by three tour guides. The scouts loved seeing the classic airplanes and some said this was the best field trip they had all year in Tiger Scouts. The adults also enjoyed the tour and encouraged other scout troops to look at attending in the future. Thanks to the amazing guides who did such a great job with the kids. *Bradley Donaldson*

WORDS OF THE MONTH:
Cumulus & Turbulent