

# JETSTREAMS

## AHART AVIATION SERVICES

AHART AVIATION SRVC  
186 Airway Blvd.  
Livermore, Ca. 94551  
TEL: 925.449.2142  
FAX: 925.373.0944  
ahart@ahart.com  
www.ahart.com  
June 2006

This year's annual Customer Appreciation Day BBQ was the best to date! Thanks to everyone who came out and braved the heat. We had record temperatures that day yet still had an excellent turn out and James did a wonderful job with the barbecue. The Cirrus display was quite a success; I don't think Beth made it out of the heat for more than 5 minutes the whole day. This event always means a lot to me as it signifies another successful year at Ahart.

This month's issue of Jet Streams includes a number of events taking place over the summer and fall months. Please read through the events page and sign up early for any classes and/or seminars you are interested in. Fred Abrams seeks out interesting and talented individuals to host the FAA seminars and we always have a large number of participants.

Fly Safely!  
~Lysa Wollard

## July Achievements

### Mike Beckley

Instrument  
Rob Goldman  
Bruce Edwards

### Jerry Nemier

CFI Reinstatement  
Tim MacHugh

### Jimmy Wang

Commercial Multi Engine  
Ivan Szeto

### Jefferson Chang

Commercial Multi Engine  
Ivan Szeto.

### Jeff Jones

Commercial Milti Engine  
David Gregory

### Laura Whitby

Private  
Bill Komanetsky

### John Hunter

Instrument  
Adam Jessup

### Rebecca Agabashian

Private  
David Gregory

### Feng Ming Chang

Commercial Multi Engine  
Ivan Szeto

### Nathan Colton

Private  
Adam Jessup

### Edmond Fung

Commercial  
Ivan Szeto

**CFI OF THE MONTH**  
**Derek Sellers**

## Upcoming Events

Single Pilot IFR Short Version  
Wings Seminar, Free  
Aug 4, 7:00:00 PM

3 Day Accelerated  
Private Pilot Ground school  
Aug 18, 8:00:00 AM

3 Day Accelerated  
Instrument and CFII Ground School  
Aug 25 8:00:00 AM

Crew Resource Management Class  
Sept 9, 8:00:00 AM

One day Mountain Flying Seminar  
Sept 10, 8:00:00 AM

One day Single Pilot IFR Seminar  
Oct 29, 8:00:00 AM

Please contact the front desk for more information or to schedule.

## Summer Weather Hazards

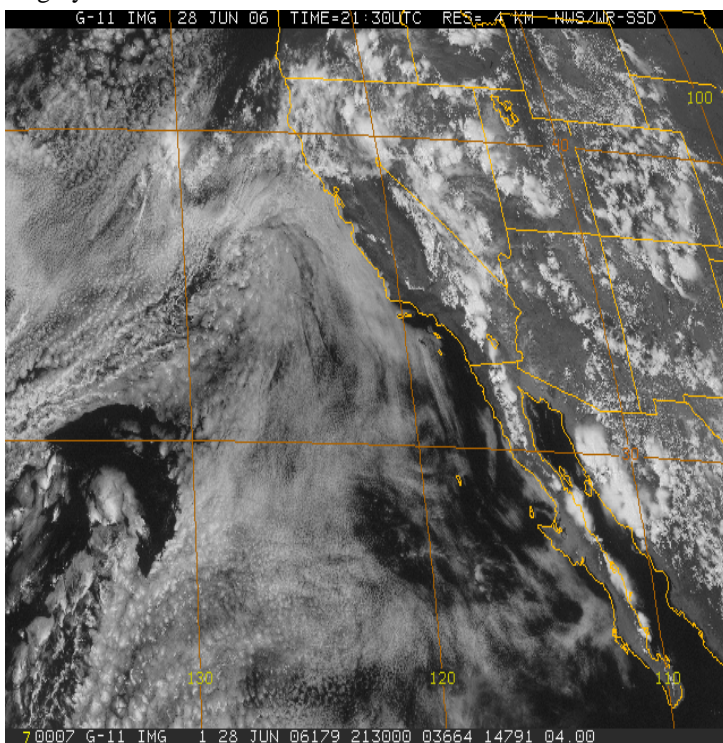
By Terry Lankford

Turbulence during the summer season occurs most often due to thermal heating and is rarely severe. It develops by late morning and is most intense during the afternoon; then diminishes by late afternoon. Turbulence typically affects the deserts and higher plateaus, leaving the valleys and coastal areas relatively smooth.

High temperatures, especially with high elevations produce high density altitude. Like thermal turbulence, density altitude is most significant during the afternoon hours. Unlike, thermal turbulence general improvement does not occur until after sunset. Small non turbocharged airplanes are most susceptible. Pilots enroute are not immune. Each year accidents occur because pilots attempt to cross the mountains with density altitudes above the airplane's ceiling! It is said one can walk across the Rockies and Sierra Nevada on the wreckage of Cessna 172s and Piper Warriors. You can't fool Mother Nature.

Like turbulence, icing—outside of convective activity—is, normally, not a serious problem, with generally low clouds tops and high freezing levels. Exceptions occur with frontal systems that generate cloud tops above 12,000 to 15,000 feet and areas of moist tropical moisture. When these phenomena occur significant icing can extend from the freezing level into the lower Flight Levels.

Low ceilings and visibilities usually result from coastal stratus, and the haze and smoke of urban areas. These, however, are normally not a factor for even the smallest aircraft equipped for minimal IFR operations. The greatest occurrences begin in May, continue through the summer months, and taper off in October. The coastal stratus is usually well defined on visual satellite imagery.



Thunderstorms are usually of the air mass variety and rarely severe. Once the warm, moist air of the Gulf of Mexico, Gulf of California, and occasionally the Pacific Ocean come into play, widespread areas of convective weather develop. This will occasionally result in the issuance of Convective SIGMETs.

Thunderstorms tend to be generally widespread and persistent during the afternoon hours. Most occur from mid-summer into early fall. They usually occur over the mountains and deserts, but occasionally drift over the valleys and coast, dissipating rapidly around sunset. Visual and infrared satellite imagery are useful in locating area of convective activity.

## The Flying Gourmet

By Jim Jellison

Wow, the seats have been reupholstered in the Arrow. Now I can leave that pillow that I use to have to sit on in the car! I have spent my whole life trying to avoid crowds and waiting in lines. I have been blessed with a job that has provided me with liberal vacation benefits so that I have not had to make the most out of all the holiday weekends that send the majority of folks out for recreation. It's the same with flying. I avoid the holidays and the weekends except for early morning and evening. So, a couple of Mondays ago I decided to extend my weekend and go flying. What a perfect day I planned. I scheduled the Arrow for a 6 AM preflight and the weather cooperated. I was pulling the wheels up at 6:45 and headed for Red Bluff (RBL) about 161 nautical miles away. I probably don't have to tell you that there was little or no traffic. Things were so quiet with Nor Cal Approach that I was afraid that my radio had gone dead. Just 76 minutes later I was on the ground at Red Bluff with a big appetite. My "Guide to California Airports" had listed an airport restaurant called the Blue Sky Cafe, (now called Valeigh's Airport Restaurant) open from 7 AM until 2 PM daily.

I looked around and didn't see any restaurant on the field and I was getting a little worried that I might go hungry until I found the sign in the Administration building lobby that pointed upstairs. It was a pleasant surprise, a lovely little restaurant with blue and white checkered tablecloths and a wonderful view of the field and the snow capped mountains beyond. After a great breakfast of eggs, hamburger patty, English muffin, fruit, and decaf coffee I was ready to explore. I didn't have to go very far. Down in the lobby there was a picture collage that captured some of the history of Bidwell Field. First of all, it was named after 2nd Lt. Robinson E. Bidwell, a Red Bluff resident, who was killed on August 2, 1918 while flying a mission during WWI. He was just 20 years old. >From 1944 to 1946 Bidwell Field was home to the U.S. Navy Ferry Service Unit No. 9. It was chosen because of its location, half way between Seattle and San Diego. During that time just about every aircraft in the Navy and Army Air Corps inventory stopped at Red Bluff. Red Bluff also has the distinction of having had United passenger service begun in 1937 with United's brand spanking new Douglas DC-3. In a room adjacent to the lobby area there is the Charles Krause Aviation Museum. It is only one room but jam packed with exciting history, models, and books. I had no idea that Red Bluff had produced two WWII aces, Ken Carlson and Eugene Hanks. Ken managed to shoot down 13 German aircraft and was shot down himself three times in WWII escaping twice. He also fought in Korea where he was the first to shoot down a MiG-15 jet, while flying a piston-engine fighter no less! Hanks became an ace in one day and on his first mission by downing 5 Japanese Zero's. So, if you find yourself headed north and want to grab a great breakfast or lunch and some aviation history, Red Bluff is a good place to stop.

## Instructor's Corner: Induced Drag

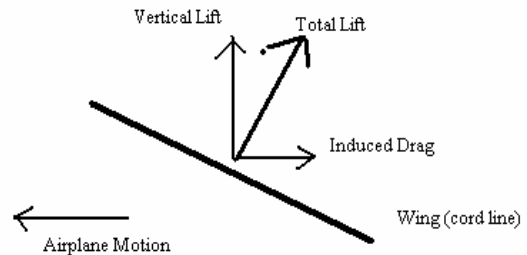
By Jordan Miller

Last month in the instructor's corner we looked at lift. Let us continue our look at the aerodynamic forces affecting an airplane by looking at drag. Drag is defined as the force that opposes forward motion. There are two types of drag, induced drag and parasitic drag. In this article we will take a closer look at induced drag.

Induced drag is one of the most misunderstood concepts in flying. I remember asking a primary student: "What is induced drag?" The student responded, "Induced drag increases when flaps are extended." This is not correct. Induced drag is NOT drag you induced by putting out flaps. Do not think of induced drag as drag that the pilot induces.

So what is induced drag? Simply put, it is drag caused by the aerodynamic creation of lift. A wing creates lift by producing low pressure on the top of the wing and higher pressure on the bottom of the wing. At the wing tips, this pressure differential will cause the higher pressure from below the wing to wrap around to the lower pressure above the wing.

This exchange of pressure causes wingtip vortices. As the airplane is moving through the air, the rotation of the vortices causes the airflow aft of the wing to be deflected downwards. This downwash induces a change in the relative wind causing the lift to be angled backwards. If the lift vector is dissected, a portion of the lift is vertical counteracting weight and a portion of the lift is backwards as induced drag.



Induced drag has a direct relationship with angle of attack. As angle of attack increases, so will induced drag because of the greater wing tip vortices created. Airplanes fly at the highest angle of attack at slow airspeeds. Therefore, the slower the airspeed, the more induced drag the airplane will experience. As airspeed increases and angle of attack decreases, induced drag will decrease.

Ground effect is the result of a reduction of induced drag due to the ground. As an airplane enters to within a wings length of the ground, but most pronounced within half a wing length, the ground starts to interfere with the production of wingtip vortices. The destruction of vortices by the ground keeps the downwash from inducing a change in the relative wind. The lift created in ground effect will be more vertical and less angled backwards. The result is less drag and more lift for a particular angle of attack.

Engineers can change the design of the wing to modify the amount of induced drag of a wing. Since induced drag is caused by wingtip vortices, an infinitely long wing would not incur any induced drag. Unfortunately, the engineers have not been able to come up with that yet, but they can adjust the aspect ratio of a wing. The aspect ratio of a wing is just the length of the wing over the width. The higher the aspect ratio of a wing the less induced drag the wing will produce. An example of a wing designed to have low induced drag is found on a glider.

Induced drag is caused by the creation of lift. By understanding it, pilots can better comprehend how the airplane reacts to changing angle of attack and ground effect. This is another puzzle piece in the understanding of the four forces, next month the Instructor's corner will look at parasitic drag.