JETSTREAMS

AHART AVIATION SERVICES

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June 2006

This year seems to be flying by at light speed! I cannot believe we are more than ½ way through 2006. I guess it is true when they say "time flies when you are having fun". This time of year Ahart hosts a customer appreciation day BBQ. This is our way of saying thank you to all of our customers and employees for your continued support. This year should be a lot of fun, Beth Duff, the new Cirrus sales rep will have an SR22 on display, and there will be a jumper for kids and lots of food and drinks for everyone. A full invitation is available on page 4 of Jet Streams.

Although I was unable to attend the most recent City Council meeting, I understand that the City Council voted to approve some major and much needed upgrades to the Livermore Airport. Thanks to everyone who did make it to the meeting and supported the Airport. Hopefully we will see more hangars in the near future.

Safe Flying!
~Lysa Wollard

June Achievements

Jeff Lambert
Solo
James Hubbard

Matt Bowers
Solo
Rob Goldman

Mark Holland
Private
Lysa Wollard

Jason Kabalin
Private
James Hubbard

Jimmy Wang
Instrument
Ivan Szeto

Derek Sellers
CFII
Adam Jessup

CFI OF THE MONTH
David Sawczyn

Attention Pilots

As usual, during the hot summer months the Ahart mechanics receive many squawks related to rough magnetos or large RPM drops during the magneto check on runup. The hot summer temperatures cause the density altitude to increase and have the effect of enrichening the fuel air mixture which leads to sparkplug fouling and poor magneto checks. To help keep the magneto checks in limits and the aircraft out of the shop it is very important to make sure that the mixture control is being leaned properly for all flight operations. This includes cruise, descent, landing and especially taxi operations. Please keep in mind that it may be necessary to lean a little more than during the cold winter months.

You are cordially invited to attend our annual Customer Appreciate Day BBQ!!

Where Ahart Aviation office
186 Airway Blvd
Sunday July 23, 2006,
1PM to 5PM

RSVP on SchedulePointe or call the front desk 925-449-2142

Summer Weather Patterns (May-October)

By Terry Lankford

Winter weather changes into the Summer season during May and June; Summer patterns transition to Winter between November and December. Occasionally, weather from one seasonal pattern overlaps into the other. This is especially true during the transition months.

In the summer season large changes occur in the circulatory pattern. The Aleutian low weakens and moves northward as does the jet stream and the main storm track. The center of the Pacific high moves northwestward and a ridge extends northeastward over the Pacific Northwest. The Great Basin high disappears. A thermal low forms over the desert southwest. Its low pressure trough extends northwestward towards the northern California coast.

Sea water temperature along the immediate coast is lower than further off shore and advection fog and status persists near the coast. The heating of the land areas cause lower pressure inland, resulting in sea breezes during the day and evening. Stratus moves on shore and filters up the valleys. Ceilings are generally IFR to MVFR, with mountain slopes and higher passes obscured. (The coastal area between Arcata and Crescent City has the most frequent and persistent summertime stratus along the entire coast.) Typically, stratus moves onshore on the afternoon sea breeze and then 10 to 20 miles into the coastal valleys. It dissipates back to near the shore around mid-day.

The persistence of the coastal marine layer depends on its depth and the pressure gradient. Stratus can penetrate well into the Central Valley, and the eastern Los Angeles Basin with the coastal areas remaining overcast all day.

One feature of the stratus is the eddying effect of coastal winds, in particular the “Catalina Eddy.” This is a southeasterly current of air, along the immediate coast, flowing contrary to the main northwesterly flow. Its vortex is in the vicinity of Catalina Island. This southeasterly current disappears above the temperature inversion, which caps the layer of cool, moist air in which the eddy is embedded. It usually develops when a rather strong current of air flows southeastward over the ocean near the coast with falling pressures inland. Coastal stratus increases rapidly—often unforecasted, and is carried further inland with bases and tops higher than normal. A solid overcast well inland may persist for several days.

In urban areas visibility is often restricted due to smoke and haze. Subsidence around the eastern portion of the Pacific high causes impurities and moisture to be held near the surface, underneath the temperature inversion. Especially in the late summer season, thermal heating does not break the inversion to allow vertical dispersion; nor does weak circulation allow horizontal dispersion. Visibilities remain in the one to four mile range—creating a real problem for VFR operations.

During the summer months, daytime heating of deserts and plateaus typically results in light to moderate afternoon thermal turbulence.

Summertime fronts are usually weak, approaching from the northwest. They frequently cause only drizzle along the northern coast and scattered showers or thunderstorms over the higher mountains. With their moisture dissipated, they tend to be dry as they move toward the southeast.

In the summer season air mass thunderstorms are most frequent over the higher mountains, deserts, and plateaus. Moisture can be brought in from as far away as the Gulf of California or even the Gulf of Mexico. This moist air usually spreads north. Weak fronts, and the passage of upper level troughs, help to set off summer thunderstorms. When moist tropical air is lifted by a front, severe thunderstorms can develop. Although infrequent, lines or clusters can occur. They most often develop along California’s coastal mountains and the Sierra Nevada.

Tropical Storms develop during the mid to late portion of the summer season in the warm tropical waters off the west coast of Mexico. Occasionally, they reach Southern California. Since their energy comes from the ocean, they dissipate rapidly over land. Their moist, unstable remnants can be carried north and inland to affect central California. Analysis of these southerly disturbances was first studied in the 1930s. Because they approached from the southeast, they were called “Sonoran” storms, after the Mexican state of that name.

The Flying Gourmet

By Jim Jellison

I love checking out different aircraft and when I got a chance to fly in a Cirrus I jumped at it. A good friend of mine, Lori, introduced me to her new stepbrother Ed, who happens to be the owner of a Cirrus SR22. Lori and Ed picked me up at the Livermore airport. They were coming from Palo Alto so I immediately recognized the Cirrus entering a left base for 25L. After a brief introduction Lori graciously relinquished the front passenger seat to me and I reluctantly accepted knowing that, having longer legs than me, she would be uncomfortable in the back. Well, I was wrong, as it seems that the Cirrus Company took a lot of things into consideration in designing this aircraft and passenger comfort was high on the list. I could go into a lot of details about the Cirrus and how it flew but the April 05 issue of AOPA Pilot did a much better job than I ever could.

We didn’t have many choices for dinner since it was a Monday evening and many of the places I frequent are closed. I did some calling around and found that Teresa’s in Jackson was open. Since Ed was such a nice guy to come over and pick me up and I didn’t want to push my luck and ask him to fly any great distance, Westover field seemed perfect. The acceleration down the runway and climb performance leaves no doubt that something big lives under the nose cowling. The Teledyne Continental 550 cubic inch, 310 horsepower engine transmits that power to thrust with a 78 inch Hartzell 3-blade propeller and it is impressive. I timed the flight from brake release to touch down and we made it to Westover in 27 minutes, twice as fast as in a Cessna 172.

Teresa's isn't far from the airport (but it is too far to walk) so we called for a cab and it was there in a jiffy. Once seated at Teresa's I noticed that the menu had changed, imagine that, and after only two years since I was there last! The old menu offered antipasto, bread, soup, salad, entrée, spaghetti, and dessert. Now the dessert is extra, but the meals are still great tasting, of ample quantity, and reasonably priced. The three of us got out of there for $40, including tip, but of course we weren't drinking anything alcoholic.

While we enjoyed our meal and Ed and I did our best to bore Lori to death with flying stories, the weather had changed. On the cab ride back to the field I noticed that the previously clear sky was now nearly filled with dark clouds. Ed, being a safety conscious kind of guy, filed an instrument flight plan back to Livermore. We were cleared first to Sacramento, then direct Tracy, to pick up the ILS for Livermore. We had hardly turned towards Sacramento when we were cleared direct Tracy. We had a few bumps over the Altamont (so what's new) but that demonstrated to me the solid, big plane feel of the Cirrus. The other additional comfort in flying a Cirrus at night is that if everything went wrong the last trick up your sleeve would be to pull the rip cord and fire the parachute. I can't make up my mind if that would make me more daring or just more relaxed?

Westover (O70) is located 63 nautical miles from Livermore on a heading on 033 degrees. Teresa's is open for dinner Thursday through Monday and Pioneer Cab can be reached at (209) 223-3335.

Instructor's corner: Aerodynamic Lift

By Jordan Miller

Lift is one of the first aerodynamic principles explained to students when learning to fly. Almost everyone learns how Bernoulli's theorem describes that moving fluid creates a decrease in pressure. Bernoulli's theorem describes a phenomenon first noticed by G.B. Venturi. Venturi noticed that when fluid ran through a restriction, it would speed up and the pressure would drop. Because of Venturi's observations, a tube with a restriction in it is called a venturi. Bernoulli's theorem can be seen everyday when taking a shower with a lightweight shower curtain. The curtain will bow in towards the shower because the flowing water causes the air to flow, thus lowering the pressure inside the shower relative to outside. If one side of a venturi is taken away, it looks like a cross section of a wing. As a wing moves through the air, it creates a lower pressure above the wing than below by accelerating the air over the wing more than below. The wing is then pushed up by the higher pressure below the wing, like the shower curtain is pushed into the shower. But, this is not the whole story! Let's take a closer look at the two theorems that describe lift and how they combine.

The most popular way to explain lift is the one given above using Bernoulli's theorem. Personally, I always had a hard time understanding the theorem. I would imagine standing in a river. When the river is moving slowly I would feel a little pressure pushing me down stream but when the river is rushing I would feel a lot of pressure. According to the previous description of Bernoulli's theorem I should be feeling less pressure in the rushing river. The problem is that the pervious description of Bernoulli's theorem was not complete.

Bernoulli's theorem really says that dynamic and static pressure are inversely related (B's theorem mathematically is total pressure (T) = dynamic (p) + static (q)). As dynamic pressure increases static pressure will decrease. Dynamic pressure is pressure due to the movement (speed/velocity) of the fluid. Static pressure is the ambient pressure. In the river example the pressure to push me down the river is the dynamic pressure. The lower pressure that pulls the shower curtain into the shower is static pressure. When flying lift is created by accelerating the airflow over the top of the wing thereby increasing the dynamic pressure and decreasing the static pressure. Pilots can increase the dynamic pressure (decrease static) by flying faster, at a higher angle of attack, or changing the shape of the wing.

Now that we have a better understanding of Bernoulli's theorem, let's look at a second explanation of lift: Newton's third law. Newton's third law states that for every action there is an equal and opposite reaction. When flying the relative wind hits the wing and is deflected downwards. According to Newton's law the wing then must have a force pushing upwards. An example of this is wakeboarding. The wakeboard is not buoyant enough to support a rider itself but once the rider is moving the board deflects enough water to support him. The same is true in airplanes. Pilots can affect lift by adjusting the downwash created. Downwash can be affected by changing the angle of attack, the surface areas of the wing, or airspeed.

Bernoulli's theorem and Newton's third law both describe how lift is created and how it is controlled. Bernoulli described the inverse relationship of dynamic pressure and static pressure. As air flows over a wing, the air is accelerated which increases the dynamic pressure and decreases the static pressure. The lower static pressure on the top of the wing versus the bottom causes the wing to be pushed up. Newton's law described how pushing air down will push up the airplane. By combining both ideas, total aerodynamic lift can be fully understood.

July Events

Cockpit Resource Management Wings Seminar
7/7/2006 7:00pm
High Altitude Ground School
7/7/2006 9:30am
Accelerated Commercial Ground School
By Fred Abrams of Abrams Aviation
7/14/2006
Ahart Customer Appreciation BBQ
7/23/2006 1pm-5pm

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