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
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It seems our Indian Summer is coming to an end. I have really enjoyed the 80 degree temperatures we saw in October and I'm hoping for a mild winter. With the end of Daylight Saving Time our evening daylight hours have been greatly reduced and we are now into our winter hours of 8AM to 6PM all week. Please be sure to check that you are night current before taking passengers flying after sunset.

This past weekend we had a very successful series of seminars hosted by Terry Lankford and Fred Abrams. Look forward to more seminars this winter, we try to keep a flow of interesting seminars through the winter months and will keep you informed as we schedule these programs. If you have any suggestions for seminar topics please let me know.

Happy and safe flying,

~Lysa Wollard

October Achievements

Kuk Hwi Jung
Solo
Derek Sellers

Greg Lyall
Solo
Randi Coon

Piotr Ptak
Solo
Derek Sellers

Michael Murray
Solo
Derek Sellers

Mark Crane
Private
David Sawczyn

Adrian Woolley
Private
David Sawczyn

Jeff Willwerth
Commercial Single Engine
David Gregory

Brodie Brazil
Commercial Single Engine
Derek Sellers

Greg Lyall
Private
Randi Coon

CFI of the Month
Derek Sellers

BFR Ground School

Terry Lankford is returning to offer the Flight Review ground school. This course will cover the ground requirement for the biennial flight review. The cost of the course is $45.00. Upon completion of the course an endorsement will be given for the ground portion and will be valid for 45 days to complete the flight portion with any Ahart Instructor.

Please sign up on Schedule Pointe or contact the front Desk.

Winter Office Hours:
Monday thru Sunday 8:00 AM to 6:00 PM

Winter Weather Patterns

By Terry Lankford

Our weather is influenced by the coastal ranges, the lower elevation valleys with numerous openings to the coast, the higher mountain ranges of the Sierra Nevada, and the higher, drier, interior valleys, plateaus, and deserts.

Weather in mountainous areas vastly differs from that over the valleys or coast. Mountain ranges, many between 10,000 and 14,000 feet, disturb the circulation patterns of the lower atmosphere, playing havoc with nearly every standard concept of weather systems. The mountains complicate weather forecasting. The more rugged the mountains, the greater the complications.

We do not have four distinct seasons like much of the country. Summer weather transitions into the Winter season in November and December; Winter weather changes to Summer patterns during May and June. Occasionally, weather from one seasonal pattern overlaps into the other. This is especially true during the transition months.

In the winter, the Gulf of Alaska produces the most frequent cyclonic activity in the Northern Hemisphere. Low pressure is centered in the vicinity of the Aleutian Islands and high pressure persists over the Great Basin. The favored storm track curves from the central Pacific northeastward towards Vancouver Island. These tracks frequently shift southward over northern and central California, and occasionally into southern California. Unlike the central and eastern U.S., in the cold season the source of moisture is brought in with the cold air.

Fronts approaching from the northwest that penetrate southeastward are usually associated with colder, more unstable air masses and produce cumuliform clouds with showers and considerable clearing behind the fronts. These storms are accompanied by strong southerly winds ahead of the front shifting to westerly with passage. Frontal systems south of the surface and upper level low pressure centers crossing the Pacific generally weaken as they move on shore.

Storm systems approaching from the west—the Central Pacific—tend to be weak. These systems often appear on the surface analysis chart as cold fronts with waves or stationary fronts. These systems might extend well into the Pacific. They bring poor, but seldom severe, weather with prolonged precipitation for several days. There is little clearing between successive systems.

Weather systems approaching the Pacific coast from the southwest are likely to be associated with air masses of relatively higher temperature and moisture content—*storms with the pineapple connection* (from the latitude of Hawaii). These storms are accompanied by substantial cloud layers and bands of precipitation. They are often associated with, or only depicted, as an upper-level low. Poor weather and heavy rains, sometimes accompanied by thunderstorms, can persist for days.

Arctic fronts, descending out of Canada, moving southward or southwestward may result in cold Arctic air pushing across the mountain barriers all the way to the coast. This, normally, only occurs a few times over a period of several years. Snow and freezing rain may accompany the front, or skies may be clear if the air masses contain little moisture.

Because of abundant low-level moisture and an upslope flow, the mountains normally take 24 to 36 hours longer than the coastal sections or valleys to clear following frontal passage.

Surface frontal positions become difficult to locate as irregular mountain barriers are crossed. The frontal weather becomes diffuse as the air masses ahead of and behind the fronts are forced to ascend the windward slopes, intensifying the weather. On the leeward sides, descending air warms and activity diminishes creating *rain shadows*—semi-arid regions east of the mountains.

Between winter storms strong high pressure often develops over the area, especially the Great Basin. High pressure often results in the formation of fog in the valleys and strong off-shore winds.

Fog in the winter affects not only the VFR pilot, but the IFR pilot as well, as near zero-zero conditions of ceiling and visibility are common. As high pressure aloft moves over the area, cold air becomes trapped in the interior valleys. Surface winds become light and skies clear following a front, nighttime radiational cooling becomes great over much of the inland valleys. Moisture is supplied from the surface, still damp from the storm. Because of turbulent mixing the most widespread and dense fog develops the second day after frontal passage. It may take days, or even weeks, before sufficient warming occurs to dissipate the fog. At times, another frontal system has to move into the area to destroy the temperature inversion and end the fog and low stratus condition.

In California's Central Valley the low fog is known as "Tule Fog" with tops usually less than 3,000 feet. ("Tule" [tôô'lê] is a Spanish word for *bullrushes*, a marsh plant that grows during this season.) The Central Valley will have ceiling and visibilities near zero, while the mountains and coast sections remain clear.

Cut-off lows, sometimes referred to as "cold lows aloft" or "upper-level lows" are an important winter weather feature. Storms resulting from cut-off lows produce precipitation, and low ceilings and visibilities over widespread areas. Forecasting the formation of cut-off lows, and their movement, is difficult. Usually an intense high pressure ridge is present over the eastern Pacific, with strong northerly or northwesterly winds aloft along the coast of the Pacific Northwest. After formation, the lows tend to move southward for the first 12 to 24 hours, in response to the strong northerly jet on the west side of the low. Later, the jet usually works around to the south side of the low, and finally to the east side. Cut-off lows sometimes move in a very erratic manner. Weather can remain poor for several days or more, under their influence.

Many of you know that I like to say: "I'm a wealth of superfluous information!" Well here's the proof.

VIRGA is rain the evaporates as it falls. The acronym stands for "Variable Intensity Rain Gradient Aloft". As the rain falls its intensity lessens, hence: VIRGA.

Instructor's Corner: Airspeed

By: Jordan Miller

Aviation has a propensity for the use of acronyms. Acronyms are useful in limiting repetitive onerous phrases, but the downside is that it is easy to forget what the original acronym represents. There is an overwhelming use of acronyms when talking about airspeed; IAS, CAS, EAS, TAS and GS. In this month's instructor's corner we will decipher these acronyms and look at airspeed.

Speed is a simple concept, distance over time, but there are many problems when trying to measure speed relative to air. In order to understand the different types of airspeed, one must understand how airspeed is measured. Airspeed shown on the airspeed indicator, indicated airspeed (IAS), is a function of dynamic pressure measured using a pitot tube, static port and airspeed indicator. There are three types of pressures involved in finding indicated airspeed; static, dynamic and total. Static pressure, also called ambient pressure, is caused by air molecules bumping into and pushing away from each other. Dynamic pressure is created by motion causing air molecules to run into something. Total pressure is the combination of dynamic and static pressure (one might recall this is a simplification of Bernoulli's equation: total pressure = dynamic + static). The airspeed indicator is simply a pressure gauge that works by taking total pressure, measured by the pitot tube, and subtracting out static pressure, measured by the static port, in order to measure dynamic pressure. Since dynamic pressure is proportional to airspeed, the airspeed indicator displays units of speed instead of pressure.

There are some benefits and disadvantages to using dynamic pressure to measure airspeed. The benefit is that lift and drag are relative to dynamic pressure, thus the airplane will perform similarly at the same dynamic pressure. For example, a plane will stall at the same indicated airspeed whether at sea level or 10,000 feet. The problem with using dynamic pressure is that it does not give pilots an accurate indicator of actual speed, distance over time. These inaccuracies are shown by the different types of airspeed.

Calibrated airspeed (CAS) is the result of the first correction made to indicated airspeed. Calibrated airspeed corrects IAS for position and calibration errors. Position errors are caused by the position of the pitot tube and static port. Ideally, the static pressure and total pressure should not be influenced by the design of the airplane. Unfortunately, this is not always the case. Calibration error is caused by the mechanism inside the airspeed indicator designed to convert dynamic pressure to airspeed. At normal operating speeds, the airspeed indicator is designed to be the most accurate, but at very low or high airspeeds, the indicator becomes less accurate. Calibrated airspeed can be determined by using a chart found in the performance section of the POH.

Once CAS is found, another correction can be made resulting in equivalent airspeed (EAS). Equivalent airspeed is CAS corrected for compressibility. As speed increases air becomes compressible which causes an increase in density and temperature causing high airspeed indications. For most pilots EAS is not accounted for because compressibility affects are not significant until about .3 Mach or 230 knots.

Finally the actual speed, true airspeed (TAS), can be found by correcting EAS, or CAS in most cases, for temperature and pressure errors. The airspeed indicator is calibrated to indicate accurately under a set temperature and pressure, typically a standard day at sea level. Any change from standard temperature, standard pressure, or altitude above sea level (i.e. density altitude) will result in a true airspeed that is different from calibrated airspeed. As air density decreases CAS will be less than true airspeed. This happens because more speed is required to create the same dynamic pressure as in higher density air. CAS can be converted to TAS using a flight computer.

If the pitot-static system was used for speed in a car, drivers would be happy to have only true airspeed, pilots are not. Planes fly within a mass of air with its own motion. In order to know how fast the speed of the airplane is over the ground, true airspeed must be converted to ground speed (GS). TAS can be converted to ground speed using a flight computer.

Understanding airspeed is essential for safe flying. Indicated airspeed shows dynamic pressure. When IAS is corrected for position and calibration errors, it is called calibrated airspeed. CAS corrected for compressibility is equivalent airspeed. True airspeed is EAS (or CAS for most general aviation) corrected for density altitude. Ground speed corrects TAS for wind. Acronyms are a convenience used in aviation, but care must be taken to truly understand and not lose the meaning behind them. In next month's Instructor's Corner, we will see how this new understanding of airspeeds applies to cross-country planning.

Aircraft Icing Information

NASA has two free on-line icing courses: "A Pilot's Guide to Ground Icing" and "A Pilot's Guide to In-Flight Icing". Both are primarily directed at business, corporate, and freight pilots; however, they contain much valuable information for pilots of aircraft not certified for flight in icing conditions.

The courses are available at:
http://aircrafticing.grc.nasa.gov/courses.html

The Flying Gourmet

by Jim Jellison

Since I started flying many years ago I have relied upon "The Pilots Guide to California Airports" for airport information and it has never let me down. Most entries under the heading of F/L/T, that is Food, Lodging and Transportation, simply state no food at field or list the name of the restaurant and its hours of operation. But for the airport at Paso Robles there is an additional paragraph titled "Fly-In Info" dedicated to the on field restaurant, Matthew's. After reading the description "Not your typical airport restaurant, Matthew's at the Airport features innovative American cuisine in an upscale yet casual atmosphere", I just had to make the trip!

Mid-morning on a weekday I lifted off in the Piper Arrow for Paso Robles and just 72 minutes later I was touching down there on runway 19. After a short taxi, I parked directly across from the Terminal Building in which Matthew's is located. You can tell a lot about a restaurant by the building it's in. Once you step into the Terminal Building at Paso Robles you know you're not in the Central Valley of California. The building is beautiful and clean; the restroom is spotless done in beige tile with a border of tile with a grape motif. I arrived just before noon, which was fortunate for me since shortly after I was seated the place filled up. Matthew's is a long narrow restaurant with a large wine rack that greets you at the entrance. Tables are on the outboard side, against the windows that overlook the field; along the back wall there is a booth and then a long upholstered bench that tables are pulled up to. They also have patio seating, with as much seating outside as they do inside.

The menu is fabulous and includes soups, salads, quiches, pasta, sandwiches, seafood, poultry and beef. As you can probably imagine this restaurant is also open for dinner 7 days a week and I bet you better have reservations. I ordered the Tournedos of Beef; two 2-ounce filets sautéed a la Normande with apples, mushrooms, brandy, cream, and glace de viande, served with gratin Dauphinoise and seasonal vegetables. Sounds pretty fancy doesn't it? Chef Matthew is a member of the American Culinary Federation and a graduate of the Culinary Institute of America (Hyde Park, New York). He is formerly of the famed REX IL Restaurante, Los Angeles, California.

The presentation of the meal was as good as it gets and the food so wonderful that I really wanted to lick the plate, but I restrained myself. Honestly, I have paid twice as much for a meal that was half as good. My only regret was that I couldn't enjoy a glass of merlot with this exquisite meal.

Paso Robles is approximately 138 nautical miles from Livermore to the southeast. I shaved 6 minutes off the flight back by short cutting the dogleg around Salinas. There's also the Estrella Warbirds museum located on the field, but that's another story.

We love airplane noise But no one else does!

By James Hubbard

Just a reminder that the Livermore Airport has a *voluntary* no flying curfew between the hours of 10pm and 6am.

For many of us nothing says freedom like the sound of an airplane taking off into the crisp early morning sunrise, or leaving the work week behind by heading out for a Friday night bay tour and a steak at Jonesy's. But those left ground bound oblivious to the opportunities a pilots license affords are left to enjoy the noise in our wake.

If possible, please try to limit your flying activities during the hours of 10pm to 6am. Touch and go operations should not take place at Livermore during this time. If night touch and go operations are required, please try and use another airport that is away from residential areas such as Byron. If departing or arriving during these hours, please avoid over flying residential areas around Livermore.

The best way to depart or enter the airport traffic pattern is to remain as high as practical and maneuver to the north east near the "Old jump zone". This is the area between 2 mile right base and Brushy Peak. From this area you may depart on course. When returning, please reverse this procedure as it will allow a right base entry for 25R or a left 45 entry to 7L and limit exposure over houses.

Remember, just a few hundred feet of altitude and a few hundred less RPM makes a big difference. Let's do our part to keep this voluntary.